ABSTRACT BOOK

AVRASYA

11th INTERNATIONAL CONFERENCE ON APPLIED SCIENCES

August 1 - 5, 2024
Tashkent

AVRASYA
11TH INTERNATIONAL CONFERENCE ON APPLIED SCIENCES
AUGUST 1 - 5, 2024-
TASHKENT

Edited By
Prof. Dr. Hülya Çiçek

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PRESENTATION
Oral presentation

PERCENTAGE OF PARTICIPATION
More than 50 % of paper are presented by participants from maintained countries.
38 papers from Turkey and 52 paper from other countries.

Members of the organizing committees of the conference perform their duties with an
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LANGUAGES
Turkish, English, Russian, Persian, Arabic

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Sayı : E-36643897-000-2300315795   05.10.2023
Konu : Görevlendirilme.

KLİNİK BİLİMLER BÖLÜMÜ BAŞKANLIĞINA

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İlgide kayıtlı yazıda belirtildiği üzere, Bölümünüz Veterinerlik İç Hastalıkları Anabilim Dalı öğretim üyelerinden Prof. Dr. Başak HANEDAN'ın, "Academy Global Conferences & Publishing tarafından önümüzdeki tarihlerde düzenlenecek olan uluslararası kongrelerde; kongre başkanı, kongre düzenleme ve bilim kurulu üyesi olarak görevlendirilmesi Dekanlığımızca uygun görülmüştür.

Bilgilerinizi ve gereğini rica ederim.

Prof.Dr. Yavuz Selim SAĞLAM
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- ZOOM bağlantısı için yukarıda verilen bağlantıyı veya yine yukarıda verilen giriş bilgilerini kullanabilirsiniz.
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2 Ağustos / August 2, 2024 / 11:00 – 13:00 Time zone in Turkey (GMT+3)

Salon	Moderator		Bildiri No ve Başlığı / Paper ID and Title	Authors
HALL / SALON 1	**Prof. Dr. ALİ RIZA GÜL**	1	LİSE DÜZEYİNDEKİ ÖĞRENCİLERİN BENLİK SAYGISI DEĞERLERİNİN FARKLI DEĞİŞKENLER İLE İNCELENMESİ: İSTANBUL - FLORYA İLÇESİ ÖRNEĞİ	Arş. Gör. HAKAN BÜYÜKÇELEBİ Prof. Dr. MAHMUT AÇAK
		2	OKUL ÖNCESİ EĞİTİM GÖREN ÇOCUKLARDA DÜZTABANLIK PREVALANSI	Prof. Dr. MAHMUT AÇAK Arş. Gör. HAKAN BÜYÜKÇELEBİ
		3	MÜASIR MƏKTƏB NECƏ OLMALIDIR?	Prof. Dr. Sevda İslam qızı Abbasova
		4	KAYNAŞTIRMA/BÜTÜNLEŞTİRME SINIFLARINDA AKRAN KABULÜNE İLİŞKİN ÖĞRETMEN GÖRÜŞLERİNİN BELİRLENMESİ	Öğretmen, Tuğçe ÇELİKER Dr. Öğr. Üyesi Tuğba PÜRSÜN
		5	İLAHİYAT FAKÜLTELERİNİN EĞİTİM PROGRAMLARININ VE YAPILARININ GÜNCELLENMESİ ÜZERİNE BAZI DÜŞÜNCELER	Prof. Dr. ALİ RIZA GÜL
		6	DELEUZE'ÜN EĞİTİM GÖRÜŞLERİ	Y L. Öğrencisi, TUĞÇE AKIŞ Prof. Dr., AYTEN KOÇ AYDIN
		7	STUDENT-BASED APPROACH IN HIGHER EDUCATION PROGRAMS	Assoc. Prof. Nazile Abdullazade

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HALL / SALON 2	Doç. Dr. Serdar YILMAZ	1	TÜKETİCİ ALEYHİNE GETİRİLEN CEZA KOŞULLARININ HAKSIZ ŞART PERSPEKTİFİNDEN DEĞERLENDİRİLMESİ	Dr. Öğr. Üyesi, HÜSEYİN BOZOK
		2	TÜKETİCİ HUKUKU BAĞLAMINDA KİŞİSEL VERİLERİN KORUNMASI	Dr. Öğr. Üyesi, HÜSEYİN BOZOK
		3	KONKORDATO MÜHLETİNİN KALDIRILMASININ SONUÇLARI	Araştırma Görevlisi ZEHRA NUR ERİM
		4	THE SEMANTIC DIMENSION OF ACTIVE AGING: THE KIRKLARELI EXAMPLE	Assoc. Prof. Dr. Yasin AKYILDIZ
		5	AVRASYA'DA GERÇEKÇİ OLMAYAN BİR TÜRK BAHARI MI? TÜRK DEVLETLERİ TEŞKİLATI	Doç. Dr. Serdar YILMAZ
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HALL / SALON 3	**Dr. Öğr. Üyesi NİHAL ACAR**	1	YouTube Videolarının Eğitimi Destekleyici Rolü	Doç. Dr. Esra CİZMECİ ÜMİT Nihat ÇELİK
		2	ORGANISATIONAL CULTURE AND ORGANISATIONAL SYMBOLISM	Doktora Öğrencisi, Furkan ŞİMŞEK Doç. Dr. Murat ŞAHİN
		3	ERKEN ÇOCUKLUK DÖNEMİNDE ÖZEL GEREKSİNİMLİ ÇOCUKLARIN RESİM ÖZELLİKLERİNİN VE AŞAMALARININ GELİŞİMLERİNİN İNCELENMESİ	Ökkeş YAMAN Serhat KÖKLÜ Fatih KAMUK Ali Egemen GÜLAYDIN Dr. Sevim KÜÇÜK KARAHAN
		4	YENİ BİR KAVRAM: SOSYOTELİZM (PHUBBİNG) ÜZERİNE TEORİK BİR İNCELEME	Dr. Öğr. Üyesi NİHAL ACAR
		5	AHLAK GELİŞİMİ: JEAN PİAGET, LAWRENCE KOHLBERG, ELİOTT TURİEL	Arş. Gör. Aylin UZUN
		6	PSİKOLOJİK DAYANIKLILIK: SOSYAL DESTEK VE BAŞ ETME STRATEJİLERİ	Arş. Gör. Aylin UZUN
		7	TÜRKİYE'DE MARKALAŞMA: İLLER BAZINDA MARKA BAŞVURULARI ÜZERİNE BİR DEĞERLENDİRME	Prof.Dr., Salih YILDIZ Doktora Öğrencisi, Mehmet Asif ALAN
		8	ENDÜSTRİ 6.0'DAN PAZARLAMA 6.0'A BAKIŞ	Prof.Dr., Salih YILDIZ Doktora Öğrencisi, Mehmet Asif ALAN

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HALL / SALON 4	Dr. Öğr. Üyesi YELİZ ALNAK Doç. Dr. KORAY KARABULUT	1	ANOTHER WAY TO DETERMINATE OF MASS ATTENUATION COEFFICIENTS OF U ELEMENT FOR ENERGIES FROM 0.001 MeV to 1 MeV	Dr. Gözde TEKTAŞ Dr. Cüneyt ÇELİKTAŞ
		2	ELECTROSPUN SAFFRON NANOFIBERS: INNOVATIVE APPLICATIONS IN FOOD PACKAGING MATERIALS	TAHMİNEH DARVISHMOHAMMADI Dr. AYŞE ÖZKAL
		3	ARDIŞIK İLERİ YÖNDE KAYAN SEÇİM YÖNTEMİNİN FARKLI ALGORİTMALARI İLE OSMANİYE İLİ GÜNEŞ RADYASYONU TAHMİN PARAMETRELERİNİN SEÇİLMESİ VE MODERN MAKİNE ÖĞRENİMİ MODELLERİ İLE YAPILAN TAHMİNLERİN KARŞILAŞTIRILMASI	Remzi Ulaş ÇİLOĞULLARI Dr. Öğr. Üyesi, Kemal BALIKÇI
		4	AN EMPIRICAL EVALUATION OF BLOCKCHAIN TRANSACTION SEARCH METHODS	BILAL ALAGHA Dr. Öğr. Üyesi İLKER ÖZÇELİK
		5	EVDE BAKIM HİZMETLERİNDE SÜREÇ İYİLEŞTİRME UYGULAMASI	Ebrar DEMİRTAŞ Doç. Dr. TÜLAY KORKUSUZ POLAT
		6	BİR OTOMOTİV YAN SANAYİ ŞİRKETİNİN ÜRETİM PLANININ HAZIRLANMASI VE KALİTE KONTROLÜ	Harun TOSUN Doç. Dr. TÜLAY KORKUSUZ POLAT
		7	INVESTIGATION OF COOLING BY MIXED CONVECTION OF A HEATED ELEMENT IN A VERTICAL CHANNEL	Dr. Öğr. Üyesi YELİZ ALNAK Doç. Dr. KORAY KARABULUT
		8	EVALUATION OF THE FLOW DIRECTOR EFFECT ON HEAT TRANSFER BY MIXED CONVECTION FROM ELECTRONIC COMPONENTS	Doç. Dr. KORAY KARABULUT Dr. Öğr. Üyesi YELİZ ALNAK
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HALL / SALON 5	Prof. Dr. Behice ERCİ	1	SYNTHESIS, SPECTRAL CHARACTERIZATION, AND *IN VITRO* CYTOTOXIC ACTIVITY EVALUATION OF A NEW HALO-FUNCTIONALIZED SULFONYL HYDRAZONE COMPOUND	Assist Prof. Eyüp BAŞARAN Assoc. Prof. Senem AKKOÇ
		2	A BENZIMIDAZOLE-BASED MOLECULE AS ANTICANCER AGENT: SYNTHESIS, SPECTROSCOPIC, AND *IN VITRO* CYTOTOXIC ACTIVITY STUDIES	Assoc. Prof. Senem AKKOÇ Assist Prof. Eyüp BAŞARAN
		3	SPACE NURSING	Prof. Dr. Behice ERCİ
		4	PEER BULLYING	Prof. Dr. Behice ERCİ
		5	EVALUATIONS OF NURSING CARE BEHAVIORS BY STUDENT NURSES PRACTICING IN PEDIATRIC CLINICS	Research Assistant Dr. Bahar ÇOLAK Lecturer Berrin GÖGER
		6	ANALYSIS OF RESEARCH ON NOMOPHOBIA AMONG NURSING STUDENTS	Research Assistant Dr. Bahar ÇOLAK Lecturer Berrin GÖGER

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Salon	Moderator		Bildiri No ve Başlığı / Paper ID and Title	Authors
HALL / SALON 6	**Asst. Prof. Dr. Suleyman CETINKAYA**	1	ON THE SOLUTION OF SPACE-TIME FRACTIONAL WAVE PROBLEM WITH FRACTIONAL NEUMANN BOUNDARY CONDITIONS	Asst. Prof. Dr. Suleyman CETINKAYA Prof. Dr. Ali DEMIR
		2	NUMERICAL SCHEME OF ATANGANA-BALEANU FRACTIONAL DERIVATIVE	Asst. Prof. Dr. Suleyman CETINKAYA Prof. Dr. Ali DEMIR
		3	INTERACTION BETWEEN DEMOGRAPHIC CHANGE, INFLATION AND FINANCIAL MARKETS: THE EXAMPLE OF BORSA ISTANBUL	Dr. Şükrü C. DEMİRTAŞ Dr. Öğr. Üyesi Demet TOPAL KOÇ
		4	MAGNETIC HYSTERESIS PROPERTIES OF Ni NANOMAGNETS	Dr. Necda ÇAM Assoc. Prof. Dr. Ümit AKINCI
		5	SMART GREENHOUSE AUTOMATION: MACHINE LEARNING AND IOT BASED GREENHOUSE MANAGEMENT SYSTEMS	DENİZ OCAK YUSUF AYAZ Dr. Öğr. Üyesi ZEYNEP HASIRCI TUĞCU
		6	AN ITERATIVE CONFORMABLE LAPLACE METHOD FOR THE SOLUTION OF ITO EQUATION	Asst. Prof., MUAMMER AYATA
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Salon	Moderator	Bildiri No ve Başlığı / Paper ID and Title		Authors
HALL / SALON 7	**Ayşe BARAN** **Polat İPEK**	1	SYNTHESIS OF AuNPs WITH THE GREEN METHOD AND ANTI-MICROBIAL AND ANTI-CANCER APPLICATIONS	Ayşe BARAN Polat İPEK
		2	DETERMINATION OF THE PROTECTIVE ROLE OF RHEUM RIBES L. EXTRACT AGAINST THE TOXIC EFFECTS OF H_2O_2 ON ALLIUM CEPA L. ROOT TIP GERM CELLS	Professor Dilek PANDIR Graduate Student Seren BENGUŞAT
		3	DETERMINATION OF THE ANTI-CANCEROUS EFFECTS OF RHEUM RIBES L. EXTRACT ON DU-145 CELL LINE	Professor Dilek PANDIR Master's student Seren BENGUŞAT Lecturer Fatih Oğuz BEKDEMİR Expert Biologist Büşra ÖZ
		4	MICROBIAL BASED PRODUCTS: EXOPOLYSACCHARIDES	Assis. Prof. Dr. Mehmet Akif OMEROGLU
		5	BİREYLERİN TIBBİ BİTKİ KULLANIMINA İLİŞKİN BİLGİ VE DÜŞÜNCELERİ; HATAY İLİ ÖRNEĞİ	Dr. Öğr. Üyesi Aybüke KAYA Ebrar Nur ŞİNİKOĞLU
		6	TÜRKİYEDE SOYA ÜRETİMİNİN YILLAR İTİBARİYLE DEĞİŞİMİ VE DÜNYADAKİ YERİ	Dr. Öğr. Üyesi Aybüke KAYA ZM. Merve ATEŞ
		7	TÜRKİYE'DE BULGUR ÜRETİMİ VE BULGUR SANAYİCİLERİNİN SORUNLARI: MARDİN İLİ ÖRNEĞİ	Dr. Öğretim Üyesi Veysi ACIBUCA
		8	Zeytin Yaprağının NADES Sıvıları Kullanılarak Ekstraksiyon Veriminin İncelenmesi	Levent Nuralın

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HALL / SALON 1	Dorota Galeza	1	THE DOCTRINE OF LEGITIMATE EXPECTATION: A STUDY OF JUDICIAL DECISIONS IN THAILAND	Assoc. Prof .Dr. Paiboon Chuwatthanakij
		2	EMPLOYEE ENTITLEMENTS TO RELIGIOUS OBSERVANCE: ANALYSIS OF THE PORTUGUESE CONSTITUTIONAL COURT'S STANCE	Susana Sousa Machado
		3	THE LEGAL PROCESS FOR CERTIFICATION OF GOVERNMENT OFFICIALS	Armen Yezekyan
		4	THE PRINCIPLES AND IMPLEMENTATION OF EFFECTIVE GOVERNANCE IN THE EUROPEAN UNION	Dr. Robert Grzeszczak
		5	THE INFLUENCE OF AMERICAN CONSERVATIVE WOMEN'S ADVOCACY GROUPS ON U.S. FOREIGN POLICY	Assis. Prof. Dr. Mohd Afandi Salleh
		6	MORPHOLOGICAL CHARACTERISTICS AND RISK FACTORS FOR BLUNT ABDOMINAL TRAUMA IN VEHICULAR COLLISIONS: AN AUTOPSY ANALYSIS	Ticijana Prijon, Branko Ermenc
		7	THE IMPLEMENTATION STRATEGY OF THE EUROPEAN FORENSIC SCIENCE VISION 2020 IN LITHUANIA	Eglė Bilevičiūtė, Vidmantas Egidijus Kurapka, Snieguolė Matulienė, Sigutė Stankevičiūtė
		8	MODERNIZING THE EUROPEAN COMPETITION NETWORK (ECN): STRATEGIES AND APPROACHES	Dorota Galeza
		9	REVAMPING THE EUROPEAN COMPETITION NETWORK (ECN): STRATEGIES FOR MODERNISATION	DR. Nazia Khan

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HALL / SALON 2	Samantha Brown	1	EXAMINING FURTHER PREDICTORS OF INTENT IN TYPE 2 DIABETES DIETARY BEHAVIOR	Omondi Walingo, G. M. Mbagaya
		2	THE INFLUENCE OF LEARNING STYLES ON IDEA GENERATION CHALLENGES	Abdullahi Musa, Dr. J. Hassan, Omar Tariq, M. M. Abdul
		3	EVALUATING THE EFFECTS OF A COGNITIVE-BEHAVIORAL THERAPY (CBT) AND MULTIDIMENSIONAL SELF-CONCEPT MODULE-BASED DRUG PREVENTION PROGRAM ON RESILIENCE AND AGGRESSION IN AT-RISK YOUTH IN MALAYSIA	Farid Ahmed, Ali Shah, Dr. Aisha Aziz
		4	AN INSIGHT INTO THE LIFESTYLE OF CIVIL SERVANTS WITHIN THE ROYAL HOUSEHOLD BUREAU: A THA WASUKRI, BANGKOK CASE STUDY	Dr. Supatra Chotikul, Nattaya Kongnok
		5	ASSESSING THE IMPACT OF TRATAKA PRACTICE ON ANXIETY LEVELS IN TEENAGERS	Rakesh Kumar, Priya Sharma
		6	INVESTIGATING THE IMPLEMENTATION OF SUFFICIENCY ECONOMY PHILOSOPHY BY URBAN COMMUNITY LEADERS IN DUSIT DISTRICT, BANGKOK METROPOLITAN AREA: A STUDY OF PERFORMANCES AND ACTIVITIES	Dr. Somsak Chaiyasit, Narongchai Nonthasorn
		7	THE ROLE OF NEUROPLASTICITY IN OFFERING A FRESH START TO LIFE	Amina Rahimi, Farhad Mirzaei
		8	EXAMINING PEER-BASED INTERVENTIONS FOR ADDRESSING SOCIAL COMMUNICATION CHALLENGES IN ADOLESCENTS WITH AUTISM: A REVIEW OF LITERATURE AND RECOMMENDATIONS FOR FUTURE RESEARCH	Samantha Brown

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HALL / SALON 3	Dr. E. Chew, Haydn Blackey	1	METHODOLOGICAL CONSIDERATIONS AND DESIGN STRATEGIES FOR UTILIZING VLE IN ENHANCING MATHEMATICAL CONCEPT ACQUISITION AMONG SECONDARY EDUCATION STUDENTS IN ENGLAND	Emily E. S. Thompson
		2	LEVERAGING DIGITAL TOOLS FOR IMPROVED COLLABORATIVE LEARNING: HARNESSING ONLINE COMMUNICATION TO FOSTER STUDENT ENGAGEMENT	Prof. A. Anderson
		3	AUGMENTING ELEMENTARY SCHOOL LEARNING WITH EDUCATIONAL MULTIMEDIA GAMES	Assoc. Prof. Maria Papadopoulos
		4	EMPOWERING E-EDUCATION THROUGH MOBILE LEARNING: A CASE STUDY ON PROMOTING INCLUSIVITY IN VARIED EDUCATIONAL ENVIRONMENTS	Dr. E. Chew, Haydn Blackey
		5	AUGMENTING MATHEMATICS SELF-STUDY FOR CPE EXAMINATION PREPARATION VIA AN INTERACTIVE E-LEARNING PLATFORM	Ayesha Ali, Fatima Khan
		6	INVESTIGATING THE VIABILITY OF VIRTUAL BIOLOGY LABORATORIES: AN INITIAL EXPLORATION	Nurul Hidayah Ismail, Halimah Badioze Zaman, Azlina Ahmad
		7	ANALYZING THE EFFECTS OF EXERCISE BEHAVIOR CHANGE INTERVENTIONS ON SOCIAL AND PSYCHOLOGICAL FACTORS AMONG HIGH SCHOOL STUDENTS: AN APPROACH BASED ON THE TRANSTHEORETICAL MODEL	Jason K. Smith, Chih-Hao Chen
		8	ENHANCED PEDAGOGICAL APPROACHES THROUGH INTERACTIVE VIRTUAL REALITY FOR FLUTE INSTRUCTION	Rodriguez K. Maria, Sanchez L. Daniel, Martinez. Luis, Gomez. Ana Maria

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HALL / SALON 4	Prof. Dr. Hye Rim Lee	1	EXPLORING GENDER DISPARITIES IN MATHEMATICS ANXIETY AMONG STUDENTS	Dr. Wei Xing Yap, Dr. Hui Wen Ng
		2	UTILIZING THE MMSE-2 FOR DIAGNOSTIC INSIGHTS IN COGNITIVE IMPAIRMENT: CASE STUDIES AND MONITORING	Dr. Ioana-Maria Popescu
		3	INVESTIGATING STUDENTS' BRAIN ELECTRICAL RESPONSES TO TEACHER'S EMOTIONAL CUES	Prof. Dr. Hye Rim Lee
		4	THE INFLUENCE OF PERSONALITY TRAITS ON COMPULSIVE GAMING: A STUDY OF THE BIG FIVE FACTORS	Dr. Eun Ji Kim
		5	EXPLORING PARENTING APPROACHES AND HOUSEHOLD COMMUNICATION DYNAMICS AMONG COLLEGE STUDENTS	Dr. Maryam Jafari
		6	THE ROLE OF EMOTICONS IN COURTEOUS EXPRESSIONS OF GREETINGS AND APPRECIATION	Prof. Dr. Sofia Bianchi
		7	UNDERSTANDING VENTING AND UNWINDING: THE IMPACT OF SEEKING THERAPEUTIC CATHARSIS, SELF-IDENTITY, AND SOCIAL CONNECTIONS IN GAMING ENVIRONMENTS	Prof. Dr. Hye Rim Lee, Dr. Eun Woo Kim, Dr. Jae Hyun Park

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HALL / SALON 5	Dr. Sameera Jayawardena	1	COMPARATIVE ANALYSIS OF STATISTICAL APPROACHES FOR PART OF SPEECH TAGGING IN NEPALI TEXT	Prof. Dr. Priyanka Sharma
		2	DYNAMIC EVOLUTION OF METAPHORICAL CREATIVITY: A FRAMEWORK FOR ANALYZING METAPHORICAL INNOVATION IN INTERACTIVE DISCOURSE	Badri Kaya
		3	PERSISTENCE OF EPENTHETIC VOWEL DURATION IN JAPANESE SPEAKERS' ENGLISH ACQUISITION	Haruka Sato, Kakeru Yazawa, Mariko Kondo
		4	CO-ARTICULATION PATTERNS OF CONSONANTS AND VOWELS IN CANTONESE MONOSYLLABIC STRUCTURES: AN ARTICULATORY ANALYSIS	Sum Wai Lee
		5	ENHANCING VOCAL REGISTER RECOGNITION THROUGH SPECTRAL ANALYSIS: A TOOL FOR VOCALISTS	Natalia Wojciechowska, Krzysztof Nowak
		6	EXPLORING CREATIVITY IN BILINGUAL ADVERTISING: A MORPHOLOGICAL EXAMINATION OF SINHALA AND ENGLISH USAGE IN SRI LANKA	Tharindu Lakmal Perera
		7	EXPLORING MORPHOLOGICAL PATTERNS IN TEXT MESSAGING: A STUDY OF URBAN BILINGUALS IN SRI LANKA	Dr. Sameera Jayawardena
		8	EXPLORING COMPUTATIONAL APPROACHES TO CONSCIOUSNESS: INTRODUCING THE INTEGRATED ABSTRACTION FRAMEWORK	Assoc. Prof. Dr. Omar Ahmed, Mohamed Ali Cherif
		9	EXPLORING THE INFLUENCE OF PLANNING AND MEMORY ON NAVIGATIONAL PROFICIENCY: INSIGHTS FROM A VIRTUAL REALITY STUDY	Ananya Patel, Suresh Kumar, Ravi Shankar, Alok Kumar Singh

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HALL / SALON 6	Dr. Sarah Ahmed	1	PATTERNS OF COLLOCATION ERRORS AMONG ESL LEARNERS: A STUDY AT FEDERAL COLLEGE OF EDUCATION, KANO, NIGERIA	Abdulrahman Ibrahim Abdullahi
		2	COMPARATIVE ANALYSIS OF BEHAVIORAL AND EEG RESPONSES AMONG NATIVE TURKIC-SPEAKING INHABITANTS OF SIBERIA AND SIBERIAN RUSSIANS DURING SYNTACTIC ERROR RECOGNITION IN NATIVE AND FOREIGN LANGUAGES	Olga M. Petrova, Alexander E. Saprygin, Ekaterina A. Ivanova, Ivan D. Petrov, Maria S. Volkova, Natalia V. Borisova,
		3	THE INFLUENCE OF MORPHEMIC ANALYSIS AWARENESS ON VOCABULARY LEARNING STRATEGIES OF ESL LEARNERS	Dr. Fatima Al-Mansoori, Anjali Patel, Abdullah Al-Saud
		4	ASSESSMENT PRACTICES IN IRANIAN UNDERGRADUATE ENGLISH TRANSLATION PROGRAMS: AN EXPLORATION OF FINAL TESTING METHODS	Mohammad Reza Jahangiri, Fatemeh Mohammadi
		5	ANALYSIS OF EXPANSION STRATEGIES IN PERSIAN SUBTITLING OF ENGLISH CRIME FILMS	Mohammad Reza Rahimi, Azra Davari, Ali Najafi
		6	CHALLENGING TRANSLATION NORMS: EXPLORING THE IMPACT OF ADAPTATION ON MEANING TRANSFERENCE"	Alexandera G. Karpova, Igor N. Kozlov, Elena P. Ivanova, Sergei A. Ivanov
		7	INFLUENCE OF TOP-DOWN PROCESSES ON PERCEPTUAL AMBIGUITY: INSIGHTS FROM TEMPORAL DYNAMICS	Prof. Dr. Anastasia S. Ivanova, Dr. Maria A. Petrov
		8	EXPLORING THE ROLE OF TEACHER GUIDANCE IN FACILITATING INFERENCE PROCESSES DURING ARABIC TEXT READING	Dr. Sarah Ahmed
		9	EXAMINING THE INFLUENCE OF MORPHEMIC ANALYSIS AWARENESS ON ESL STUDENTS' VOCABULARY LEARNING STRATEGY: EXPLORING INFLECTIONAL AND DERIVATIONAL PERSPECTIVES	Ranjana Devi, Adelina Binti Asmawi, Nabeel Abdallah Mohammad Abedalaziz

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HALL / SALON 7	Dr. Kevin Nana Moustapha	1	CORRELATION OF JOB SATISFACTION, MOTIVATION, AND THE FIVE DIMENSIONS OF ORGANIZATIONAL CITIZENSHIP BEHAVIOR	Mushtaq Bakar, M. K. Umar
		2	UTILIZING ONLINE GAMES FOR EDUCATIONAL PURPOSES IN ADDRESSING LEARNING CHALLENGES	M. Smyrnaiou , Z. Margoudi
		3	COMPARING SPATIAL ABILITIES, MEMORY, AND INTELLIGENCE ACROSS DRIVERS WITH VARIED PROFESSIONAL EXPERIENCE LEVELS	A. Kim Khon, T. Mukhitdinova
		4	UNDERSTANDING SUBJECTIVE WELL-BEING: CONTRASTS BETWEEN HIGH AND LOW EMOTIONAL INTELLIGENCE AMONG STUDENTS	Veronika Kim , Alla Pivkina , Khon luva Nataliya
		5	PSYCHOPATHIC DISORDERS AND JUDICIAL SENTENCING: CAN NEUROSCIENCE SHIFT THIS AGGRAVATING FACTOR TO A MITIGATING ONE?	Dr. Kevin Nana Moustapha
		6	VARIETIES OF EPILEPSY AND INSIGHTS FROM EEG-LORETA ANALYSIS ON EPILEPTIC ACTIVITY	Leila Maleki, Esmali Kooraneh, Taghi Hossein Derakhshi
		7	CORRELATIONS BETWEEN GAMING ENGAGEMENT AND LIFE SATISFACTION: EXPLORING THE INFLUENCE OF SELF-ESTEEM, SELF-EFFICACY, AND SOCIAL CAPITAL	Dr. Hye Lee Jeong, Assis. prof. Dr. Eui Rim Jun
		8	EXPLORING CASE STUDIES ACROSS THREE LEARNING DOMAINS: COGNITIVE, AFFECTIVE, PSYCHOMOTOR	Assoc. Prof. Dr. Zeinabsadat Haghshenas
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HALL / SALON 1	Dr. Öğretim Üyesi Turgay KARALİNÇ	1	SEMENTE KARBÜRÜN DALMA EROZYONLA İŞLENMESİNDE BOYUTSAL DOĞRULUĞUN ARAŞTIRILMASI	YL Öğr. Ahmet Tolunay IŞIK Prof. Dr. Mustafa GÜNAY
		2	PASLANMAZ ÇELİĞİN LAZER İLE KESİLMESİNDE GEOMETRİK TOLERANS ANALİZİ	Doç. Dr. Ramazan ÇAKIROĞLU Prof. Dr. Mustafa GÜNAY
		3	REUSE OF HIGH DENSITY POLYETHYLENE (HDPE) PLASTIC WASTES WITH CERIUM DIOXIDE AS A NEW POLYMER NANOCOMPOSITE	Delia Teresa Sponza, Rukiye Öztekin
		4	DETECTION OF EARTHQUAKE DAMAGE USING PRE AND POST EARTHQUAKE SATELLITE DATA	Assist. Prof. Dr. ÖMER FARUK NEMUTLU
		5	ESTIMATION OF WARPAGE OF A BUMPER PART AFTER PLASTIC INJECTION PROCESS BY USING FINITE ELEMENT METHOD (FEM)	Ayşe Hazal CEYLAN Doç. Dr. Bülent KAYA
		6	ENSURING STRUCTURAL INTEGRITY IN OFFICE CHAIR DESIGN: A COMPREHENSIVE ANALYSIS	Melike ÜNLÜ Doç. Dr. Bülent KAYA Kadir Cem TUĞCU
		7	RISK ANALYSIS WITH L-TYPE MATRIX AT THE FACILITY WHERE MEDICAL MATERIAL PRODUCTION IS CARRIED OUT AS A HAZARDOUS WORKPLACE	Assit. Prof. Dr. ZEHRA GÜLTEN YALÇIN Res. Assist. Dr. MUSTAFA DAĞ Assoc. Dr. ERCAN AYDOĞMUŞ
		8	AN EXAMPLE OF A RISK ANALYSIS STUDY WITH AN L-TYPE MATRIX WITHIN THE SCOPE OF SAFETY MEASURES IN THE PRODUCTION OF MEDICAL EQUIPMENT	Assit. Prof. Dr. ZEHRA GÜLTEN YALÇIN Res. Assist. Dr. MUSTAFA DAĞ Assoc. Dr. ERCAN AYDOĞMUŞ
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HALL / SALON 2	Prof. Dr. Hülya ÇİÇEK	1	DEPRESYONUN ELEKTROENSEFALOGRAFİ SİNYALLERİ KULLANARAK SINIFLANDIRILABİLMESİ İÇİN SİNYAL İŞLEME VE YAPAY ZEKA YÖNTEMLERİ İÇEREN BİR YAKLAŞIM	Fatma LATİFOĞLU Sabrina TURTUROVA
		2	DOSE-DEPENDENT SEDATIVE EFFECTS OF CLONIDINE PREDOMINATE OVER ANTINOCICEPTION IN A RAT MODEL	Ali Yucel KARA Deniz YILDIZ PEHLIVAN
		3	APİTOKSİN: ZEHİR Mİ YOKSA İLAÇ MI?	Prof. Dr. Hülya ÇİÇEK
		4	CLIMATE CHANGE AND ITS EFFECTS ON CHILD HEALTH	Öğr. Gör. Dr. HAKAN AVAN
		5	SMOKELESS TOBACCO USE AND HEALTH EFFECTS IN ADOLESCENTS	Öğr. Gör. Dr. HAKAN AVAN

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HALL / SALON 3	**Doç. Dr. İsmail METİN**		1	MODERNIST FEAR OF MASS CULTURE AND MISOGYNY IN HOWARDS END AND MRS DALLOWAY	DR., PÜRNUR TURHAN
			2	THE PERSONALITY OF THE PROPHET MUHAMMAD ACCORDING TO THE FRENCH WRITER AND STATESMAN ALPHONSE DE LAMARTINE	Doç. Dr. İsmail METİN
			3	THE PROPHET MUHAMMAD AS A 'HERO' IN THE WEST: AN EVALUATION OF THE FRENCH MANUSCRIPT OF THOMAS CARLYLE'S LECTURE	Doç. Dr. İsmail METİN
			4	MOLLA PƏNAH VAQİFİN YARADICILIĞINDA QADIN GÖZƏLLİYİNİN TƏRƏNNÜMÜ	Lamiyə Rza qızı Məmmədova
			5	TOPLUMDİLBİLİM AÇISINDAN ÇİN DEVLETİNİN MİLLİ BÖLGESEL ÖZERKLİK SÖYLEMİ	Dr. Adilcan ERUYGUR
			6	İKİ DİLLİ ÖĞRENCİLERİN TÜRKÇE YAZMA STRATEJİLERİ ÜZERİNE BİR İNCELENME	Bilim Uzmanı Furkan CAN Prof. Dr. Mehmet Nuri KARDAŞ
			7	İKİ DİLLİ ÖĞRENCİLERİN TÜRKÇE YAZMA TUTUMLARI ÜZERİNE BİR İNCELENME	Bilim Uzmanı Furkan CAN Prof. Dr. Mehmet Nuri KARDAŞ

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		2	SOSYOLOJİ ÖĞRETİMİNDE ZİYA GÖKALP'İN ÖNEMİ	Öğr. Gör. Dr., GAMZE ASLAN
		3	"ALMANCA DERS KİTAPLARI A1.1, SCHRİTTE A1.2, SCHRİTTE A2.1 VE SCHRİTTE A2.2 KÜLTÜRLERARASI YAKLAŞIM BAĞLAMINDA İNCELENMESİ"	Öğretmen / Mütercim, PINAR PINARBAŞI Doç. Dr, ŞERİF ORUÇ
		4	TÜBİTAK BİLİM TOPLUM VE ÖĞRENCİ ARAŞTIRMA PROJELERİNDE SÜRECE İLİŞKİN ÖĞRETMEN VE ÖĞRENCİ DEĞERLENDİRMELERİ	Mehmet Özden YALÇIN Prof. Dr. Ayşegül ŞEYİHOĞLU
		5	BEDEN EĞİTİMİ VE SPOR ÖĞRETMENLERİNİN PARANORMAL İNANÇLARI	Dr. Öğr. Üyesi OĞUZHAN ÇALI Doç. Dr. YAHYA DOĞAR
		6	YAŞAM MERKEZİNDE SPOR YAPAN BİREYLERİN BEDENİ BEĞENME DÜZEYLERİ	Doç. Dr. YAHYA DOĞAR Doç. Dr. SERKAN DÜZ Dr. Öğr. Üyesi OĞUZHAN ÇALI
		7	DISINTEGRATION IN EDUCATION: A CRITICAL LOOK AT CHANGING OF EDUCATOR AND LEARNER PROFILE	Prof. Dr. H. EYLEM KAYA

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HALL / SALON 5	Prof. Dr. Abdulvahap BAYDAŞ Assoc. Prof. Dr. Murat BAYAT	1	RELATIONSHIP BETWEEN EXCESSIVE WORKLOAD AND BURNOUT LEVEL IN HEALTH WORKERS	Dr. Öğr. Üyesi EBRAR ILIMAN YALTAGİL
		2	DEMOKRAT PARTİ DÖNEMİ EKONOMİ POLİTİKALARININ BANKACILIK SEKTÖRÜ ÜZERİNE ETKİSİ (1950-1960)	Dr. Öğr. Üyesi Mehmet KAPUSIZOĞLU Yüksek Lisans Öğrencisi, Adem KIRMIZIOĞLU
		3	THE EFFECT OF ADVERTISEMENTS ON SOCIAL NETWORKING SITES ON CONSUMER PURCHASING BEHAVIOR: TEXTILE INDUSTRY EXAMPLE	Prof. Dr. Abdulvahap BAYDAŞ Assoc. Prof. Dr. Murat BAYAT
		4	AN EMPIRICAL STUDY TO DETERMINE THE QUALITY OF SERVICES PROVIDED BY PUBLIC INSTITUTIONS	Prof. Dr. Abdulvahap BAYDAŞ Assoc. Prof. Dr. Murat BAYAT
		5	SOSYAL MEDYADA MARKA BOYKOTLARI VE KRİZ İLETİŞİMİ: STARBUCKS ÖRNEĞİ	Öğr. Gör. Dr. FATMA YİĞİT AÇIKGÖZ
		6	THE IMPACT OF COVID-19 ON STOCK MARKETS: INSIGHTS FROM ARTIFICIAL STOCK MARKET MODELS	Dr. Şükrü C. DEMİRTAŞ Dr. Öğr. Üyesi Demet TOPAL KOÇ
		7	ÜNİVERSİTE ÖĞRENCİLERİNDE SAĞLIĞI GELİŞTİRİCİ VE KORUYUCU DAVRANIŞLARIN YAŞAM TATMİNİ ÜZERİNDEKİ ETKİSİ	Prof. Dr. Hüdaverdi BİRCAN Doktora Öğrencisi Mesut KARAMAN
		8	DİJİTAL VATANDAŞLIK VE SAĞLIKLI YAŞAM: TEKNOLOJİNİN SAĞLIK ÜZERİNDEKİ DÖNÜŞTÜRÜCÜ ETKİSİ	Prof. Dr. Hüdaverdi BİRCAN Doktora Öğrencisi Mesut KARAMAN
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		2	SOCIO-POLITICAL ANALYSIS OF "RABBITS AND BOA CONSTRICTORS" BY FAZIL ISKANDER	MA. İkbal KILIÇ
		3	ARMENIA'S ECOCIDE POLICY IN KARABAKH AND EASTERN ZANGAZUR	Ayətxan ZİYAD
		4	MOSKOVA'DA KAMU YÖNETİMİ VE YEREL ÖZYÖNETİM	Doç. Dr. KEMAL YAMAN Doktora Öğrencisi, ARDAK TOLEUBAY
		5	KURUMSAL İLETİŞİM, KURUM KÜLTÜRÜ VE SOSYAL SORUMLULUK EKSENİNDE KURUMSAL VATANDAŞLIK ROLÜ	Mertcan ERCEĞİZ Doç. Dr. Emel TANYERİ MAZICI

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		4	HOWARD LUCK GOSSAGE VE SIRA DIŞI REKLAM ANLAYIŞI	Doç. Dr. GÜLDANE ZENGİN
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		6	EXPLORING COMPUTATIONAL GEOMETRY THROUGH TWO SPATIAL EXPERIMENTS	Prof. Dr. Marco lee Hemmerling
		7	STUDY ON THE VIABILITY OF EMBEDDED REAL-TIME SYSTEMS	Dr. YongXia, JIN

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		9	INVASION OF PECTINATELLA MAGNIFICA IN FRESHWATER ECOSYSTEMS OF THAILAND	Dr. Surin Supasorn,

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		7	INDUSTRIAL WASTEWATER SLUDGE MANAGEMENT IN CHONGQING, CHINA	Victor Emery David Jr.), Yasinta John Md. Sahadat Hossain
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		9	NiO-CeO2 NANOCATALYST FOR EFFICIENT REMOVAL OF PRIORITY ORGANIC POLLUTANTS FROM WASTEWATER VIA CATALYTIC WET AIR OXIDATION AT MILD CONDITIONS	Professor Dr. Anushree

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		2	INTRINSIC ELECTROMAGNETIC PHENOMENA AND ATOM-FIELD INTERACTIONS IN BIOLOGICAL CELLS	Dr. Masroor H. S. Bukhari
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ANOTHER WAY TO DETERMINATE OF MASS ATTENUATION COEFFICIENTS OF U ELEMENT FOR ENERGIES FROM 0.001 MeV to 1 MeV

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ABSTRACT

In the present study, mass attenuation coefficients of uranium element were calculated theoretically for the energies in the range of 0.001-1 MeV. This calculation was performed by a code developed under LabVIEW software. To test the developed code, the attenuation coefficient obtained from the written code for the each energy was compared with that of XCOM program. In addition to this, just like in the XCOM, the graph of variation of the mass attenuation coefficients versus the photon energy values was displayed via the code for the U element. It was concluded from the obtained results that the developed code can be used as an alternative to calculate the mass attenuation coefficients of the elements. This result encourages us to improve the code for different energies and elements.

Keywords: Mass attenuation coefficient, LabVIEW, Uranium.

ELECTROSPUN SAFFRON NANOFIBERS: INNOVATIVE APPLICATIONS IN FOOD PACKAGING MATERIALS

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ABSTRACT

This review examines the growing field of saffron nanofibers and their possible uses in materials for food packaging. Saffron, known for its valuable biological compounds such as crocin, picrocrocin, and safranal, has been widely researched thanks to its healing and edible properties. Nanotechnology has made it possible to encapsulate saffron extracts into nanofibers, improving their functionality, stability, and bioavailability. Various techniques, including electrospinning, have been employed to fabricate saffron nanofibers, leveraging polymers like zein and tragacanth for encapsulation. These nanofibers are ideal for active and intelligent food packaging due to their remarkable properties, including excellent heat stability, controlled release, and antioxidant activity. This article discusses the synthesis, properties, and uses of saffron nanofibers, emphasizing how these nanofibers can preserve food products' quality and lengthen their shelf life through creative packaging techniques. The potential of saffron nanofibers to revolutionize food packaging and contribute to sustainability in the food industry is also discussed.

Keywords: Food packaging, nanofibers, saffron

ARDIŞIK İLERİ YÖNDE KAYAN SEÇİM YÖNTEMİNİN FARKLI ALGORİTMALARI İLE OSMANİYE İLİ GÜNEŞ RADYASYONU TAHMİN PARAMETRELERİNİN SEÇİLMESİ VE MODERN MAKİNE ÖĞRENİMİ MODELLERİ İLE YAPILAN TAHMİNLERİN KARŞILAŞTIRILMASI

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ÖZET

Bu çalışmada, Türkiye'nin güneyinde güneş radyasyonu açısında potansiyeli yüksek bir yer olan Osmaniye ilinin güneş radyasyonu tahmini gerçekleştirilmiştir. Çalışmada Nasa-Power platformundan alınan güneş radyasyonu, rüzgar hızı, basınç, nem, yağış, hava açıklığı indeksi, sıcaklık, maximum sıcaklık, minimum sıcaklık, çiğlenme noktası parametreleri kullanılmıştır. Önce Osmaniye ili verileri üzerinde ardışık ileri yönde kayan seçim metodu Random Forest ve lineer regresyon algoritmaları ile uygulanmış ve modern makine öğrenmelerine giriş parametresi olarak verilecek özellikler elde edilmiştir. Ardışık İleri Yönde Kayan Seçim yönteminin farklı algoritmaları ile bulunan özellikler giriş parametreleri olarak Osmaniye ilinin güneş radyasyonu tahmin işleminde kullanılmıştır. Giriş parametrelerini kullanan tahminci modeller tahmin işlemini gerçekleştirmiş ve elde ettiği sonuçlar karşılaştırmalı olarak analiz edilmiştir. Karşılaştırma metrikleri olarak RMSE, MAE ve R2 kullanılmıştır. Makine öğrenmesi yöntemlerinden XGBOOST, LIGHTGBM ve Uzun Kısa Süreli Bellek(LSTM) algoritmaları bu çalışmada kullanılmıştır. Çalışma kapsamında en başarılı sonucu ardışık ileri yönde kayan seçim Random Forest algoritmasını kullanan LSTM makine öğrenimi metodu vermiştir.

Anahtar Kelimeler: XGBOOST, LIGHTGBM, LSTM, Özellik Seçimi, Güneş Radyasyonu Tahmini

AN EMPIRICAL EVALUATION OF BLOCKCHAIN TRANSACTION SEARCH METHODS

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ABSTRACT

Searching for a specific transaction on a blockchain is vital for multiple reasons. It facilitates the verification of transaction authenticity and completion. Also, for businesses and financial institutions, transaction searches are indispensable for auditing, fraud detection, and ensuring compliance. Recently, blockchain technology has garnered attention as a potential solution to these issues. Despite the increasing interest in blockchain technology and decentralized applications, finding a specific transaction within blockchain is still lacking reliable and efficient approaches. This paper offers an overview of the latest research in finding transactions in blockchain. It provides a background on blockchain technology and an evaluation of the current transaction searching techniques. In our study, we evaluated three prominent approaches on Sawtooth platform and compared their results. Our test results show that the time for finding a transaction using database search outperforms the linear searching and the Sawtooth searching approaches. However, database search operations rely on supplementary resources operating in parallel with the blockchain. Furthermore, this approach necessitates an additional system for the verification of queried transactions. The paper discusses the findings of transaction searching approaches, highlights the limitations within the current system, and gives recommendations for future enhancements to address the existing challenges of searching within blockchain.

Keywords: Blockchain, Transaction Search, Sawtooth

EVDE BAKIM HİZMETLERİNDE SÜREÇ İYİLEŞTİRME UYGULAMASI

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ÖZET

Evde bakım hizmetleri, ihtiyacı olan hastalara ev ortamında sağlık hizmeti verilmesidir. Bu hizmet tüm dünyada yaygın olarak verilmektedir. Genellikle kronik hastalar ve 65 yaş üzeri yaşlı hastalar için sunulan bir hizmettir. Bu hizmet; evde bakım hizmeti alan hastanın ve yakınlarının yaşam kalitesini kötü şekilde etkileyen durumların azaltılması, günlük hayatı en az etkileyecek şekilde düzenlemeler yapılmasını faaliyetlerini amaçlamaktadır. Bakımın sürekliliğinin sağlanması da bu açıdan önemlidir. Bu çalışma dahilinde hali hazırda işleyen fakat kalite, performans düşüklükleri ve araç eksikleri olan hizmet sektörüne ait olan evde bakım hizmetleri sisteminin en verimli halinin oluşturulması amaçlanmıştır. Hastalara verilen hizmet kalitesinin ve tedavi süresinin artırılması, araç rotalarından ve araç eksikliklerinden kaynaklanan sorunların çözümlenmesi istenmektedir. Problemin çözümlenmesi aşamasında önceki hali ve problemin çözüm esnasında ekstra bir araç satın alınması halinde ne gibi sonuçlar doğuracağı araç rotalama probleminin çözüm yollarından biri olan Clark ve Wright yani tasarruf algoritması ile hesaplanmıştır. Elde edilen çıktılara yönelik analiz çalışması yapılmıştır.

Anahtar Kelimeler: Araç Rotalama, Clark ve Wright, Evde Bakım Hizmetleri.

BİR OTOMOTİV YAN SANAYİ ŞİRKETİNİN ÜRETİM PLANININ HAZIRLANMASI VE KALİTE KONTROLÜ

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ÖZET

Artan rekabet ortamı ile işletmelerin gelecek için güvenle yol alabilmeleri, planlamalarını doğru yaparak hem müşteri memnuniyetini sağlamaları hem de verimliliklerini-üretkenliklerini sürdürebilmeleri talep tahminlerindeki doğrulukla paraleldir. Bu kapsamda talep tahminleri üretim planlama ve dolayısıyla işletmenin uzun dönemli planlamaları içinde önem arz etmektedir. Günümüz iş dünyasında otomotiv sektörüne hizmet veren şirketlerde dönem dönem tedarik zinciri sorunları yaşanmaktadır. Bu sorunlar da şirketlerin üretim miktarlarını etkilemektedir. Şirketlerin ellerinde fazladan stok birikmesine, müşteri siparişi gelmediği zaman da maliyetlerin artmasına sebep olmaktadır. Bu çalışma ile otomotiv sektöründe faaliyet gösteren bir yan sanayi şirketinin, pandemi sonrası düzenli üretim yapabilecek duruma getirilmesi amaçlanmıştır. Regresyon ve korelasyon analizi ile talep tahmini çalışması yapılarak en uygun miktarda hammadde satın alması sağlanmıştır. Bu talep tahminleri doğrultusunda üretim planı oluşturulmuştur. Başlangıçta gelen müşteri siparişlerini elindeki stoklardan değerlendirerek elde bulundurma maliyetinden kurtulmuştur. Kontrol diyagramı ile de üretim süreci izlenerek kusurlu bir ürün çıkmasına engel olunmuştur.

Anahtar Kelimeler: Regresyon, korelasyon, ana üretim çizelgeleme, ekonomik sipariş miktarı, kontrol diyagramı.

DİKEY BİR KANALDAKİ ISINMIŞ ELEMANIN KARIŞIK TAŞINIM İLE SOĞUTULMASININ İNCELENMESİ

INVESTIGATION OF COOLING BY MIXED CONVECTION OF A HEATED ELEMENT IN A VERTICAL CHANNEL

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ÖZET

Elektronik bileşenlerin soğutulması, daha hızlı, daha küçük ve daha güvenilir sistemlerin gelişmesinin sağlanması bakımından oldukça önemlidir. Uygulamada birçok elektronik bileşenin soğutulması durumunda ısı yayan bileşen dizileri dikey veya eğimli paralel plaka kanallarına yerleştirilmektedir. Bu çalışmada, dikey bir kanal içerisinde eşkenar üçgen şekilli engel elemanının karışık taşınım ile ısı transferi ve kanal içerisindeki akış özellikleri sayısal olarak değerlendirilmiştir. Akışın kanal içerisindeki ısınmış engel elemanına daha iyi yönlendirilmesi ve karışık taşınım etkisinin artırılması amacıyla kanal içerisine üst giriş kısmından 30° ve 60° açılı akış yönlendirici kanatçık yerleştirilmiştir. Sayısal inceleme, zamandan bağımsız, laminer ve iki boyutlu olarak süreklilik, momentum ve enerji denklemlerinin Ansys-Fluent bilgisayar programı kullanılarak çözülmesiyle gerçekleştirilmiştir. Eşkenar üçgen şekilli elektronik elemanlara sabit ısı akısı uygulanırken, kanalın diğer yüzeyleri ve akış yönlendiriciler ise adyabatiktir. Kanalda kullanılan su akışkanı sıkıştırılamaz olup, kanala giriş sıcaklığı 293 K' dir. Çalışmada kullanılan Reynolds sayısı (Re) değeri 100, değiştirilmiş Richardson sayısı (Ri*) aralığı 50-150, AGM (Akış Geçiş Mesafesi) ise 2 ve 4 olarak tasarlanmıştır. Çalışmadan elde edilen sonuçlar, literatürdeki deneysel ve sayısal sonuçlarla kıyaslanmış ve sonuçların birbirleriyle tutarlı oldukları saptanmıştır. Sonuçlar, Ri* sayısına bağlı olarak farklı AGM oranları için kanala yerleştirilen açılı akış yönlendiricilerin ısınmış engellerin ortalama Nu sayıları (Nu_m) ve kanaldaki ortalama akışkan sıcaklıkları (T_m) üzerindeki etkisinin değişimleri olarak incelenmiştir. Ayrıca, 2 ve 4 akış geçiş mesafesi oranları dikkate alınarak Ri*=150 için kanatçıksız ve kanatçıklı durumlarda kanaldaki karışık taşınımın hız ve sıcaklık konturu dağılımları üzerindeki etkileri görselleştirilerek detaylı bir şekilde incelenmiştir. Ri*=150 için AGM=2 ve 60° açılı kanatçıklı durumda Nu_m sayısının kanatçıksız duruma göre %3,13 daha fazla olduğu belirlenmiştir.

Anahtar Kelimeler: Karışık taşınım, Akış yönlendirici, Kanatçık, Akış geçiş mesafesi.

ABSTRACT

Electronic components' cooling is crucial in ensuring the development of faster, smaller and more reliable systems. In practice, heat-emitting component arrays are placed in vertical or inclined parallel plate channels when cooling many electronic components. In this study, the mixed convection heat transfer and flow properties of an equilateral triangular-shaped obstacle element in a vertical channel were evaluated numerically. To better direct the flow to the heated obstacle element in the channel and to increase the mixed convection effect, 30° and 60° angled flow director fin was placed in the channel from the upper entrance. Numerical analysis was carried out by solving steady, laminar and two-dimensional continuity, momentum and energy equations using the Ansys-Fluent computer program. While constant heat flux is applied to the equilateral triangular-shaped electronic elements, other surfaces of the channel and flow directors are adiabatic. The water fluid used in the channel is incompressible and the temperature at which it enters the channel is 293 K. The Reynolds number (Re) value used in the study was designed as 100, the modified Richardson number (Ri*) range was 50-150, and the FPR (Flow Passage Ratio) was designed as 2 and 4. The results obtained from the study were compared with the experimental and numerical results in the literature and the results were found to be consistent with each other. The results were examined as changes in the effect of angled flow directors placed in the channel on the mean Nu numbers of heated obstacles (Nu_m) and mean fluid temperatures (T_m) in the channel for different FPR ratios, depending on the Ri* number. In addition, the effects of mixed convection in the channel on the velocity and temperature contour distributions were visualised and examined in detail for Ri*=150, considering the flow transition distance ratios of 2 and 4, in cases with and without fins. For Ri*=150, it was determined that the Nu_m number was 3.13% higher in the case with FPR=2 and 60° angle fins than in the case without fins.

Keywords: Mixed convection, Flow director, Fin, Flow passage ratio

ELEKTRONİK BİLEŞENLERDEN KARIŞIK TAŞINIM İLE ISI TRANSFERİNDE AKIŞ YÖNLENDİRİCİ ETKİSİNİN DEĞERLENDİRİLMESİ

EVALUATION OF THE FLOW DIRECTOR EFFECT ON HEAT TRANSFER BY MIXED CONVECTION FROM ELECTRONIC COMPONENTS

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ÖZET

Günümüzde enerjinin etkin bir biçimde kullanılmasıyla ısı ve akış uygulamalarında yeni yaklaşımlarla geliştirilmiş ekipmanların verimliliklerinin artırılarak, işletme maliyetleri düşük, doğaya duyarlı ve güvenliği yüksek ürünler geliştirilmesi çalışmaları yoğunlaşmıştır. Elektronik eleman öğelerinin soğutulması durumunda pratikte birçok ısı yayan bileşen dizileri dikey veya eğimli paralel plaka kanallarına konumlandırılmaktadır. Bu çalışmada, dikey bir kanal içerisinde eşkenar üçgen şekilli iki adet engel elemanının karışık taşınım ile ısı transferi ve kanal içerisindeki akış karakteristikleri sayısal olarak irdelenmiştir. Akışın kanal içerisinde bulunan ısınmış engel elemanına yönlendirilmesinin ve karışık taşınım etkisinin iyileştirilmesi amacıyla kanal içerisine üst giriş kısmından 30°, 45° ve 60° açılı akış yönlendirici kanatçık yerleştirilmiştir. Sayısal inceleme, zamandan bağımsız, laminer ve iki boyutlu olarak süreklilik, momentum ve enerji denklemlerinin Ansys-Fluent bilgisayar programı kullanılarak çözülmesiyle gerçekleştirilmiştir. Dikey kanaldaki eşkenar üçgen şekilli elektronik engel elemanlarına sabit ısı akısı uygulanırken, kanalın diğer yüzeyleri ve akış yönlendiriciler ise adyabatiktir. Kanalda kullanılan su akışkanı sıkıştırılamaz olup, kanala giriş sıcaklığı 293 K' dir. Çalışma, Reynolds sayısının (Re) 500 değeri, değiştirilmiş Richardson sayısının (Ri*) 50-200 ve AGM (Akış Geçiş Oranı)' nın 3,33 ve 4 aralığındaki değerleri için gerçekleştirilmiştir. İki engel arası mesafe sabit alınmıştır. Çalışmadan elde edilen sonuçlar, literatürdeki deneysel ve sayısal sonuçlarla karşılaştırılmış ve sonuçların birbirleriyle uyumlu oldukları belirlenmiştir. Sonuçlar, Ri* sayısına bağlı olarak farklı AGM oranları için kanala yerleştirilen açılı akış yönlendirici kanatçıkların ısınmış engellerin ortalama Nu sayıları (Nu_m) ve kanal boyunca ortalama akışkan sıcaklıkları (T_m) üzerindeki etkileri açısından araştırılmıştır. Ayrıca, incelenen iki farklı AGM ve Ri*=200 için kanatçıksız ve kanatçıklı durumlarda dikey kanallardaki hız ve sıcaklık konturu dağılımları detaylı bir şekilde incelenmiştir. Ri*=200 ve AGM=3,33 için 30° açılı durumda kanatçıksız duruma göre Nu_m sayısının %5,61 daha fazla olduğu ve AGM=4 olduğunda Nu_m sayısı için bu değerin %5,82' ye çıktığı saptanmıştır.

Anahtar Kelimeler: Karışık taşınım, Üçgen engel, Isı transferi, Akış yönlendirici, Kanatçık.

ABSTRACT

Nowadays, efforts to develop products with low operating costs, environmental friendliness, and high safety by increasing the efficiency of equipment in heat and flow applications by using energy effectively have intensified. In this study, mixed convection heat transfer and flow characteristics of two equilateral triangular-shaped obstacle elements in a vertical channel were numerically investigated. To direct the flow to the channel's heated obstacle element and improve the mixed convection effect, 30°, 45° and 60° angled flow director fin was placed in the channel from the upper entrance. Using the Ansys-Fluent computer program, numerical analysis was carried out by solving steady, laminar and two-dimensional continuity, momentum and, energy equations. While constant heat flux is applied to the equilateral triangle-shaped electronic barrier elements in the vertical channel, other surfaces of the channel and flow directors are adiabatic. The water fluid used in the channel is incompressible and the entrance temperature to the channel is 293 K. The study was carried out for Reynolds number (Re) of 500, modified Richardson number (Ri*) of 50-200 and FPR (Flow Passage Ratio) values of 3.33 and 4. The results obtained from the study were compared with the experimental and numerical results in the literature and it was determined that the results were compatible with each other. The results were investigated in terms of the effects of angled flow directors placed in the channel for different FPR ratios depending on the Ri* number, on the mean Nu numbers of heated obstacles (Nu_m) and mean fluid temperatures (T_m) along the channel. In addition, the velocity and temperature contour distributions in vertical channels were examined in detail for the two different FPRs and examined Ri*=200 in cases without and with fins. It was determined that for Ri*=200 and FPR=3.33, the Nu_m number was 5.61% higher in the 30° angle case than in the case without fins, and when FPR=4, this value increased to 5.82% for the Nu_m number.

Keywords: Mixed convection, Triangle obstacle, Heat transfer, Flow director, Fin.

SYNTHESIS, SPECTRAL CHARACTERIZATION, AND *IN VITRO* CYTOTOXIC ACTIVITY EVALUATION OF A NEW HALO-FUNCTIONALIZED SULFONYL HYDRAZONE COMPOUND

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Abstract

In this study, we report the synthesis, spectral characterization, and *in vitro* cytotoxic activity evaluation of a novel halo-functionalized sulfonyl hydrazone compound. The synthesis was achieved through a multi-step reaction sequence, starting from readily available precursors and incorporating a halogen moiety to enhance biological activity. The structure of the synthesized compound was confirmed using various spectroscopic techniques, including Nuclear Magnetic Resonance (NMR), Infrared (IR) spectroscopy, and elemental analysis. The compound's cytotoxic potential was assessed against A549 (lung carcinoma cell line) using the MTT assay. The results indicated that the halo-functionalized sulfonyl hydrazone exhibited significant cytotoxic effects, with IC_{50} values comparable to those of standard chemotherapeutic agent cisplatin.

A BENZIMIDAZOLE-BASED MOLECULE AS ANTICANCER AGENT: SYNTHESIS, SPECTROSCOPIC, AND *IN VITRO* CYTOTOXIC ACTIVITY STUDIES

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Abstract

The search for effective anticancer agents has led to the exploration of benzimidazole derivatives due to their diverse biological activities. In this study, we report the synthesis and in vitro cytotoxic activity of a benzimidazole-based molecule in HeLa cell line, a widely used model for cervical cancer research. The compound was synthesized through a multi-step reaction sequence. The cytotoxic effects of the benzimidazole derivative were evaluated using the MTT assay, which measures cell viability. Our results demonstrated a dose-dependent cytotoxicity with an IC_{50} value indicating significant anticancer activity. This study highlights the potential of benzimidazole-based molecules as promising anticancer agents against cervical cancer.

PEER BULLYING

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ABSTRACT

Although bullying is common on a global level, all over the world, its frequency varies according to culture, country and age of students. In recent years, increasing peer bullying affects hundreds of millions of children and adolescents, showing that the negative mental consequences can last into adulthood. The aim of this study is to draw attention to peer bullying, which has increased in the world and in our country.

Online databases (PubMed, Medline, Web of Science, Wiley, Sipringer, science direct, sage publication) for articles published on the subject use the terms "peer bullying", "violence in schools", "social violence at school", "consequences of bullying". English articles were scanned. Regarding the selection criteria of articles, after electronic searches, the articles were previously transferred to the Rayyan QCRI application (https://rayyan.qcri.org) for selection, classification and evaluation. Initially, duplicate records not specifically related to the research topic were eliminated. Then, titles, abstracts and full texts of the articles were read. This activity allowed us to assess coherence and homogenization whether the identified records were relevant and met the research objectives. Data were collected on peer pullying, study design, and outcomes.

Bullying, which is extremely disturbing, is a phenomenon that not only affects the victims or bullies, but can also negatively affect other individuals who are not directly involved in bullying.

Key Words: Bullying, Adolescent, Peer bullying

AKRAN ZORBALIĞI

ÖZET

Zorbalık küresel düzeyde, tüm dünyada yaygın olarak görülmekle birlikte sıklığı, kültüre, ülkelere öğrencilerin yaşlarına göre değişiklik göstermektedir. Son yıllarda, giderek artan akran zorbalığının yüz milyonlarca çocuk ve ergene etki ettiği olumsuz zihinsel sonuçların yetişkinliğe kadar sürebildiğini göstermektedir. Bu çalışmanın amacı dünyada ve ülkemizde artmış olan akran zorbalığına dikkat çekmektir.

Konu ile ilgili yayınlanan makaleler için çevrimiçi veri tabanları (PubMed, Medline, Web of Science, Wiley, Sipringer, science direct, sage publication) "akran zorbalığı", "okullarda şiddet", "okulda sosyal şiddet", "zorbalığın sonuçları" terimlerini kullanarak İngilizce makaleler tarandı. Başlangıçta, özellikle araştırma konusuyla ilgili olmayan mükerrer kayıtlar

elendi. Daha sonra başlıklar, özetler ve makalelerin tam metni okundu. Bu aktivite, belirlenen kayıtların konuyla alakalı olup olmadığını ve araştırma hedeflerini karşılayıp karşılamadığını uyumluluk ve homojenleştirmeyi değerlendirmeye olanak sağladı.

Son derece rahatsızlık verici olan zorbalık sadece mağdur veya zorbaları etkilememekle beraber zorbalıkla direkt ilgisi olmayan diğer bireyleri de olumsuz etkileyebilecek bir olgudur.

Anahtar Kelimeler: Zorbalık, Adölesan, Akran zorbalığı

SPACE NURSING

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ABSTRACT

The future of space nursing presents many challenges and opportunities. Nurses can take part in space nursing by integrating technology into nursing practice, enhancing the role of healthcare in space exploration. It could even play a vital role in maintaining the well-being and health of astronauts and future space settlers by preparing for the establishment of settlements beyond Earth. The purpose of this review article is to draw attention to space nursing and to share the results of a small number of studies on this subject.

Online databases (PubMed, Medline, Web of Science, Wiley, Sipringer, CINAHL) for published articles on the subject using the terms "space nursing", "Health problems in space", "space care", "space medicine", "space health research". English articles were scanned. Data were collected on space nursing, study design, and outcomes.

The field of Space Nursing is growing rapidly, but there is still a significant gap and need for innovation and implementation of new care protocols and methods in microgravity environments. In addition, identifying risky components that may negatively affect human health in space is also an important issue.

Key Words: Nursing, Space, Space Nursing, Space Health

UZAY HEMŞİRELİĞİ

ÖZET

Uzay hemşireliğinin geleceği çok sayıda zorluk ve fırsatı birlikte sunmaktadır. Hemşireler, uzay araştırmalarında sağlık hizmetlerinin rolünü geliştirerek, hemşirelik uygulamalarına teknolojiyi entegre ederek uzay hemşireliğinde yer alabilirler. Hatta dünya ötesinde yerleşimlerin kurulmasına hazırlanarak, astronotların ve gelecekteki uzay yerleşimcilerinin refahı ve sağlığının sürdürülmesinde hayati bir rol oynayabilir. Bu derleme makalenin amacı uzay hemşireliğine dikkat çekmek ve bu konuda az sayıda yapılmış çalışma sonuçlarını paylaşmaktır.

Konu ile ilgili yayınlanan makaleler için çevrimiçi veri tabanları (PubMed, Medline, Web of Science, Wiley, Sipringer, CINAHL) "uzay hemşireliği", "Uzayda sağlık problemleri "uzayda bakım", "uzay tıbbı", "uzay sağlık araştırmaları" terimlerini kullanarak İngilizce makaleler tarandı. Uzay hemşireliği, çalışma tasarımı ve sonuçları hakkında veriler toplanmıştır.

Uzay Hemşireliği alanı hızla büyüyor ancak mikro yerçekimi ortamlarında yenilik ve yeni bakım protokolleri ve yöntemlerinin uygulanması konusunda hala önemli bir boşluk ve ihtiyaç var. Ek olarak, uzayda insan sağlığını olumsuz yönde etkileyebilecek riskli bileşenlerin belirlenmesi de önemli bir husustur.

Anahtar Kelimeler: Hemşirelik, Uzay, Uzay Hemşireliği, Uzayda sağlık

HEMŞİRELİK ÖĞRENCİLERİNDE NOMOFOBİYE İLİŞKİN YAPILAN ARAŞTIRMALARIN İNCELENMESİ

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ÖZET

Nomofobi, literatürde teknoloji bağımlılığı kapsamında ele alınan ve mobil telefon yoksunluğu olarak tanımlanan bir durumdur ve akıllı telefon kullanım sıklığıyla ilişkili olarak gelişmektedir. Nomofobi, mobil telefondan ve internetten uzak kalma korkusu olarak tanımlanan modern çağ fobisidir. Klinik psikolojide ise nomofobi; kişinin cep telefonuna ulaşamadığında veya cep telefonu üzerinden iletişim kuramadığında yaşadığı istemsiz korku duygusu olarak tanımlanmaktadır. Kişinin cep telefonundan mahrum kaldığı durumlarda anksiyete ve stres yaşaması nomofobi varlığına işarettir. Bu araştırmada hemşirelik öğrencileri ile yürütülen araştırmalar Google Akademik arama motorunda hemşirelik öğrencisi, nomofobi ve bu kelimelerin İngilizceleri olan nursing students, nomophobia anahtar kelimeler ile taranarak belirlenmiş ve elde edilen çalışmalar konularına yönelik kategorize edilerek bulguları yorumlanarak çıkarımlar yapılmıştır.

Anahtar Kelimeler: Nomofobi, Hemşirelik, Öğrenci.

ANALYSIS OF RESEARCH ON NOMOPHOBIA AMONG NURSING STUDENTS

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ABSTRACT

Nomophobia, defined in the literature as a condition falling under the scope of technology addiction, is characterized by mobile phone deprivation and develops in relation to the frequency of smartphone use. Nomophobia is defined as a modern-day phobia of being away from a mobile phone and the internet. In clinical psychology, nomophobia is described as the involuntary feeling of fear experienced when a person cannot access their mobile phone or communicate via their mobile phone. Experiencing anxiety and stress in situations where a person is deprived of their mobile phone indicates the presence of nomophobia. In this study, research conducted with nursing students was identified using the keywords "nursing students" and "nomophobia" on the Google Scholar search engine, and the studies obtained were categorized according to their topics. The findings were interpreted, and conclusions were drawn.

Keywords: Nomophobia, Nursing, Student.

PEDİATRİ KLİNİKLERİNDE UYGULAMA YAPAN ÖĞRENCİ HEMŞİRELERİN HEMŞİRELİK BAKIM DAVRANIŞLARINA İLİŞKİN DEĞERLENDİRMELERİ

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ÖZET

Aile merkezli bakım pediatri hemşireliğinde, hastanede yatan çocuk ve ailesinin beklentilerine en iyi cevap veren ve gereksinimlerini en iyi şekilde karşılayan bir bakım felsefesidir. Aile ve çocuğun bir bütün olarak ele alındığı bu yaklaşımının temelinde ebeveynlerin yeterli kılınması, güçlendirilmesi yer almaktadır. Bu yaklaşım ailenin kararlarına saygı duymakta, çocuk ve ailenin bağımsızlığını desteklemektedir. Bu kapsamda araştırma, çocuk hasta ve ebeveynlere hemşire tarafından verilen bakım davranışlarının öğrenci gözünden değerlendirmesini amaçlamaktadır. Araştırma Nisan-Mayıs 2024 tarihleri arasında Karadeniz Teknik Üniversitesi Hemşirelik Bölümünde eğitim gören ve çocuk sağlığı ve hastalıkları hemşireliği dersi uygulamasını yapan 130 öğrenci hemşire ile yürütüldü. Araştırmanın verileri öğrencilerin uygulama yaptığı KTÜ Farabi Hastanesi'nin süt çocuğu, adölesan, çocuk enfeksiyon ve çocuk cerrahi servislerinde öğrenci hemşireler uygulama yaparken toplandı. Araştırmada "Bakım Davranışları Ölçeği" kullanıldı. Ölçek hemşirelik bakımını değerlendirmek için tasarlanmış olup 1-hiç ve 6- her zaman olmak üzere 6'lı likert şeklindedir. Puan ortalaması üzerinden değerlendirilebilmektedir. Araştırmaya katılan öğrencilerin %78.5'inin kadın, yaş ortalamalarının 22.10±1.14, %28.5'inin adölesan, %26.2'sinin çocuk enfeksiyon, %23.1'inin çocuk cerrahi ve %22.3'ünün süt çocuğu servisinde uygulama yaptığı belirlendi. Ölçek alt boyut puan ortalamaları; başkalarına saygı 4.19±0.86, profesyonel bilgi ve tutum 4.55±0.81 ve birey için ulaşılabilir olma 4.13±0.89 olarak belirlendi. Toplam ölçek ortalaması ise 4.29±0.82 tespit edildi. Sonuç olarak öğrencilerin gözünden hemşirelerin bakım davranışlarını değerlendiren bu araştırmada bakım davranış puanlarının ortalamanın üzerinde olduğu ancak aile merkezli bakım açısından yeterli olmadığı saptanarak öneriler sunuldu.

Anahtar Kelimeler: Bakım davranışı, öğrenci, hemşire, çocuk hasta, aile merkezli bakım

EVALUATIONS OF NURSING CARE BEHAVIORS BY STUDENT NURSES PRACTICING IN PEDIATRIC CLINICS

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ABSTRACT

Family-centered care in pediatric nursing is a philosophy that best meets the expectations and needs of hospitalized children and their families. This approach, which considers the family and the child as a whole, is based on empowering and enabling parents. It respects the family's decisions and supports the independence of the child and family. This research aims to evaluate the care behaviors provided by nurses to pediatric patients and their parents from the perspective of nursing students. The study was conducted between April-May 2024 with 130 nursing students enrolled in the pediatric nursing course at Karadeniz Technical University. The data were collected while student nurses were practicing in the infant, adolescent, pediatric infection, and pediatric surgery wards of KTÜ Farabi Hospital. The "Care Behaviors Inventory" was used in the research. The inventory is designed to evaluate nursing care on a 6-point Likert scale, ranging from 1-never to 6-always, and can be assessed based on the average score. It was determined that 78.5% of the participating students were female, with an average age of 22.10 ± 1.14, and that 28.5% practiced in the adolescent ward, 26.2% in the pediatric infection ward, 23.1% in the pediatric surgery ward, and 22.3% in the infant ward. The average subscale scores were found to be 4.19 ± 0.86 for respect for others, 4.55 ± 0.81 for professional knowledge and attitude, and 4.13 ± 0.89 for being accessible to the individual. The overall scale average was determined to be 4.29 ± 0.82. As a result, the research evaluating the care behaviors of nurses from the students' perspective found that the care behavior scores were above average but insufficient in terms of family-centered care, leading to recommendations for improvement.

Keywords: Care behavior, student, nurse, pediatric patient, family-centered care

ON THE SOLUTION OF SPACE-TIME FRACTIONAL WAVE PROBLEM WITH FRACTIONAL NEUMANN BOUNDARY CONDITIONS

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ABSTRACT

The primary focus of this study is to establish exact solution of space-time fractional wave problem (STFWP) by means of separation of variables method. The fractional derivatives are taken in Caputo sense. The homogenous boundary conditions are given as fractional Neumann boundary conditions. The proposed method allows us to construct the solution in series form in terms of fractional trigonometric functions.

Keywords: Space-Time Fractional Wave Equation, Separation of Variables Method, Caputo Fractional Derivative, Fractional Trigonometric Functions

NUMERICAL SCHEME OF ATANGANA-BALEANU FRACTIONAL DERIVATIVE

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ABSTRACT

In recent years, new concepts of fractional derivative with non-singular and non-local kernels have been developed to overcome the limitations of conventional fractional derivatives such as Caputo and Riemann-Liouville. For the established fractional differentiation with singular kernel, a numerical scheme has been utilized in this paper. The suggested scheme has been applied to solve fractional initial value problem. The analysis of the exact and approximate solutions leads to the result that the proposed scheme is very effective and its convergence rate is very high.

Keywords: Fractional initial value problem, Atangana-Baleanu fractional derivative, Caputo fractional derivative

INTERACTION BETWEEN DEMOGRAPHIC CHANGE, INFLATION AND FINANCIAL MARKETS: THE EXAMPLE OF BORSA ISTANBUL

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ABSTRACT

The objective of this study is to gain insight into the intricate relationship between the average age of the population, inflation rates, and the number of investors in financial markets, and their impact on the economy and investment strategies. In order to achieve this objective, the study considers a number of factors and conducts an extensive economic analysis. The methodology employed to examine this relationship encompasses an analysis of the average age of the population and its implications for savings and pension funds. The investigation considers the potential inclination of ageing investors towards safer and more stable investment instruments. Furthermore, the study examines the impact of inflation on investment strategies and asset protection. The objective is to evaluate the potential for investors to utilise alternative investment instruments as a means of mitigating the impact of inflation. The impact of the number of investors in financial markets is examined, with Borsa Istanbul serving as a case study. Furthermore, the impact of an increase in the number of investors on market liquidity and price movements is a crucial aspect that merits consideration. Furthermore, it is essential to acknowledge that additional economic elements, including the overall economic well-being of the market, political stability, energy prices, international trade, and economic occurrences, can also impact these relationships. The findings of this study yield several significant insights that are worthy of further investigation.

1.　The demographic shift towards an ageing population has an impact on financial markets. Individuals of an advanced age are inclined to invest their savings and pension funds in a manner that prioritises the security of their capital.

2.　The inflation rate exerts an influence on investors' strategies, with a considerable number of investors seeking asset protection through alternative investments.

3. The number of investors in financial markets, such as the Borsa Istanbul, exerts a considerable influence on trading activity and market liquidity.

In conclusion, the relationship between the age structure of the population, inflation rates, and the number of investors in financial markets is complex and multifaceted. This complexity arises from the interaction of a number of factors, including economic health, political stability, energy prices, international trade, and economic events..

Keywords : Investment Strategies, Ageing Population, Inflation.

MAGNETIC HYSTERESIS PROPERTIES OF Ni NANOMAGNETS

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ABSTRACT

Nanomagnets have been the subject of extensive investigation recently due to their many potential future applications in spintronics and data storage [1].

On a scale of 10-6 to 10-9 m, the Landau–Lifshitz–Gilbert (LLG) equation delivers a comprehensive theoretical explanation of the magnetization dynamics of magnetic materials. Only in very rare circumstances is this equation exactly analytically solvable. Thus, computational micromagnetics is necessary to comprehend the micromagnetic framework. [2].

Using OOMMF micromagnetics software, the ground state spin morphologies and magnetic response of nickel (Ni) nanomagnets have been examined in this study [3]. It has been discovered that the magnitude of the external magnetic field, which varies both statically and dynamically, has a significant impact on the spin morphologies and magnetic hysteresis of Ni nanomagnets.

Keywords : Nickel Nanodots, Magnetic Properties, Micromagnetism,LLG equation.

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AKILLI SERA OTOMASYONU: MAKİNE ÖĞRENİMİ VE IOT TABANLI SERA YÖNETİM SİSTEMLERİ

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ÖZET

Bu çalışmada, modern tarım uygulamaları için geliştirilen bir sera yönetim sistemi uygulaması gerçekleştirilmiştir. Sistemde, öncelikle seradaki bitkilerin fotoğrafları çekilerek Pytorch tabanlı makine öğrenimi modeli ile olgunlaşmamış, olgunlaşmakta olan ve olgunlaşmış ürünlerin sayısı ile hastalıklı yaprakların sayısı belirlenmektedir. Ardından, elde edilen veriler Firebase veritabanına aktarılmakta ve çiftçilere anlık bilgi sağlamak amacıyla React Native ile geliştirilmiş bir mobil uygulama aracılığıyla erişilebilir hale getirilmektedir. Ayrıca, seradaki toprak nem sensörleri sürekli olarak nem seviyelerini izlemekte ve belirli bir seviyenin altına düştüğünde otomatik sulama sistemi devreye girmektedir.

Tasarlanan sistemde, düzenli aralıklarla çekilen ve görüntü işleme teknikleri kullanılarak analiz edilen bitki fotoğraflarından makine öğrenimi modeli ile bitkilerin olgunlaşma durumları ve hastalık belirtilerinin tespiti yapılmış ve bunun sonucunda modelin %92 doğruluk oranıyla olgunlaşma ve hastalık tespiti yaptığı gözlemlenmiştir. Öte yandan, her 15 dakikada bir ölçüm yaparak nem seviyelerini izleyen ve belirli bir eşik değerin (%30) altına düştüğünde otomatik sulama sistemini devreye sokan toprak nem sensörleri sayesinde bitkilerin ihtiyaç duyduğu su miktarı gözetilerek bir sulama yapılmakta, böylece harcanan su optimal düzeyde tutulmakta ve tasarruf sağlanmaktadır. Bu çalışma kapsamında geliştirilen akıllı sera otomasyon sistemi, çiftçilere uzaktan takip ve yönetim imkanı sunarak iş yükünü hafifletmekte ve tarım süreçlerini daha verimli hale getirmektedir. Geliştirilen mobil uygulama sayesinde, çiftçiler seradaki bitki durumunu ve toprak nem seviyelerini anlık olarak izleyebilmekte ve gerekli müdahaleleri zamanında yapabilmektedir.

Bu çalışma, makine öğrenimi ve mobil teknolojiler kullanılarak seralarda bitki izleme ve yönetiminin nasıl optimize edilebileceğini göstermektedir. Sonuçlar, sistemin tarım sektöründe verimlilik ve sürdürülebilirlik açısından önemli katkılar sunabileceğini göstermektedir.

Anahtar Kelimeler: Sera Yönetimi, Makine Öğrenimi, Görüntü İşleme, Mobil Uygulama, Otomatik Sulama, Bitki İzleme

SMART GREENHOUSE AUTOMATION: MACHINE LEARNING AND IOT BASED GREENHOUSE MANAGEMENT SYSTEMS

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ABSTRACT

The objective of this study is to implement a greenhouse management system developed for modern agricultural applications. The system begins by taking photographs of the plants in the greenhouse. These images are then analysed by a Pytorch-based machine learning model, which determines the number of immature, maturing and mature crops and the number of diseased leaves. Subsequently, the data is transferred to the Firebase database and made accessible through a mobile application developed with React Native, thereby providing farmers with immediate information. Furthermore, soil moisture sensors in the greenhouse continuously monitor the moisture levels, and when they fall below a certain threshold, the automatic irrigation system is activated.

In the designed system, the maturity and disease symptoms of the plants were detected with a machine learning model from plant photographs taken at regular intervals and analysed using image processing techniques. The model was observed to have an accuracy of 95% in detecting maturity and disease. Conversely, the soil moisture sensors, which monitor moisture levels at 15-minute intervals and activate the automatic irrigation system when the threshold value (30%) is reached, enable irrigation to be carried out in a manner that considers the amount of water required by the plants. This approach ensures that water consumption is kept at an optimal level and that costs are reduced. The smart greenhouse automation system developed within the scope of this study provides farmers with remote monitoring and management, thereby reducing their workload and enhancing the efficiency of their agricultural processes. The mobile application developed enables farmers to monitor the plant status and soil moisture levels in the greenhouse in real time, allowing them to implement timely interventions.

This study demonstrates the potential for machine learning and mobile technologies to optimise plant monitoring and management in greenhouses. The results indicate that the system can make a significant contribution to productivity and sustainability in the agricultural sector.

Keywords: Greenhouse Management, Machine Learning, Image Processing, Mobile Application, Automatic Irrigation, Plant Monitoring

AN ITERATIVE CONFORMABLE LAPLACE METHOD FOR THE SOLUTION OF ITO EQUATION

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ABSTRACT

In this research, a new method consisting of the combination of the Adomian decomposition method and the Laplace transform was used to find the approximate solutions of fractional Ito equation in conformable sense. This Ito equation is actually a KdV type equation which is frequently preferred in predicting the normal rolling behavior of ships at sea and it is known as a indispensable model for many nonlinear physical applications in the fields of hydrodynamics, magnetoacoustic propagation for plasmas and surface tension emerging in shallow waters. This Ito equation also explains us the interaction process of two internal long waves. The solutions found here are in good agreement with the existing solutions. The results obtained by calculations guarantee that the current technique is very accurate, converges quickly and is highly effective. It is also a mathematical tool that can be easily applied to solve real life problems that arise in many fields of engineering and sciences. The obtained results also show that the method used here will be an important tool in solving various non-linear partial differential equations in many fields such as fluid dynamics, non-linear sciences, nonlinear waves and ocean engineering.

Anahtar Kelimeler : Laplace Decompositon Method, Laplace Transform, Conformable Derivative, Ito Equation.

YEŞIL YÖNTEM ILE AUNP'LERIN SENTEZI VE ANTI-MIKROBIYAL VE ANTI KANSER UYGULAMALARI

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Özet

Tıbbi açıdan yararlı olan bitkilerin belirli kısımları alınarak elde edilen yeşil nanopartiküller son yıllarda araştırmacılar tarafından ivme kazanmıştır. Bu çalışma kapsamında *Althaea officinalis* bitkisi alınarak Altın nanopartiküllerin sentezinde indirgeyici ajan olarak kullanıldı. Altın nanopartiküllerin sentezinin amacı (AuNP'ler), çok farklı yüzey alanlarına sahip olmaları, metalik nanopartiküller (NP'ler) arasında Plazmon rezonans özellikleri, sentezleme sürecinin kolaylığı, çevre dostu olmaları, istenilebilir düzeyde şekiller ve boyutlarda sentezlenmeleri ve kararlı oluşlarından dolayı altın nanopartikülleri sentezlendi. Elde edilen nanopartiküller karekterizasyon işleminde bazı cihazlar kullanılarak altın nanopartiküllerin morfolojik yapısı aydınlatıldı. Althaea officinalis bitkisi aracılığıyla elde edilen altın nanopartiküllerin AuNP'lerin HDF, U87, CaCo-2, ve Skov-3 hücre hatları ile etkileşimleri sonucu % baskılama oranları 12.5 µg mL-1de sırasıyla IC50 değerleri 106, 22, 59 ve 14 olarak tespit edildi. Antimikrobiyal aktivite için Minimum inhibisyon konsantrasyon (MİC) metodu ile gram pozitif (*L. monocytogenes*) gram negatif bakteri (*K. pneumaniae*) ve maya suşu (*candida albikans*) suşları üzerindeki etkileri araştırıldı ve MİK değerleri sırasıyla 3.00, 0.75 ve 0.18 olarak belirlendi.

Anahtar kelimeler: AuNPS, K. pneumaniae, L.monocytogenesCaCo-2, ve Skov-3 ve MİC.

Synthesis of AuNPs with the Green Method and Anti-microbial and Anti-cancer Applications

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Abstract

Green nanoparticles obtained by taking certain parts of medically beneficial plants have gained momentum among researchers in recent years. Within the scope of this study, the Althaea officinalis plant was taken and used as a reducing agent in the synthesis of gold nanoparticles. The purpose of synthesizing gold nanoparticles (AuNPs), Gold nanoparticles were synthesized due to their very different surface areas, plasmon resonance properties between metallic nanoparticles (NPs), ease of synthesis process, environmental friendliness, synthesis in desired shapes and sizes, and their stability. In the characterization process of the obtained nanoparticles, the gold nanoparticles' morphological structure was clarified using some devices. As a result of the interaction of gold nanoparticles and AuNPs obtained through the Althaea officinalis plant with HDF, U87, CaCo-2, and Skov-3 cell lines, % suppression rates were determined as 12.5 µg mL-1 and IC50 values were 106, 22, 59, and 14, respectively. For antimicrobial activity, its effects on gram-positive (L. monocytogenes), gram-negative bacteria (K. pneumoniae), and yeast strains (candida albicans) were investigated using the Minimum Inhibition Concentration (MIC) method, and MIC values were determined as 3.00, 0.75 and 0.18, respectively

Keywords: AuNPS, K. pneumaniae, L.monocytogenesCaCo-2, and Skov-3 and MIC.

RHEUM RIBES EKSTRATININ DU-145 HÜCRE HATTI ÜZERİNDEKİ ANTİKANSEROJEN ETKİLERİNİN BELİRLENMESİ

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ÖZET

Rheum ribes L. (Işkın otu), geleneksel tıp ve farmakoloji alanlarında iyileştirici bir etkiye sahip olmasıyla bilinir, bu etkiler başlıca antimikrobiyal, antibakteriyel, antiviral, antidiyabetik, antikanserojen, sitotoksik etkiler olarak sıralanabilir. DU-145 hücre hattı, insan prostat kanseri hücrelerinden türetilmiş bir hücre hattıdır. Bu hücre hattı, özellikle prostat kanserinin araştırılması ve tedavisi üzerine çalışmalarda yaygın olarak kullanılmaktadır. Apoptoz yöntemi, hücrelerin programlanmış bir şekilde ölmesini ifade eden doğal bir süreçtir. Bu çalışmada, canlı ve cansız hücrelerin *Akridin orange* ve *Ethidium bromür* boyalarının 1:1 oranında karıştırılması sonucu elde edilen boyar madde ile boyanarak canlı hücrelerin yeşil renk, ölü hücrelerin ise kırmızı renk olarak gözlemlenmesini sağlayan apoptoz yöntemi kullanılmıştır. Florasan mikroskop altında hücrelerdeki canlılık durumu incelenerek hücrelerin canlılık oranları belirlenmiştir. Sonuç olarak artan dozlarda *R. ribes* ekstratı ile muamele edilen DU-145 hücrelerinde canlı ve ölü hücreler arasındaki fark; düşük dozdan yüksek doza çıkılırken hücrelerin yeşilden kırmızı renge döndüğü tespit edilmiştir. Bu çalışma, ışkın otunun DU-145 kanser hücre hattına karşı öldürücü olduğunun ortaya konulmasında önemli olmuştur.

Anahtar Kelimeler: DU-145, Işkın Otu, Apoptoz Yöntemi

DETERMINATION OF THE ANTI-CANCER EFFECTS OF *RHEUM RIBES* EXTRACT ON DU-145 CELL LINE

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ABSTRACT

Rheum ribes L. (ragweed) is known for its therapeutic effects in traditional medicine and pharmacology, including prominent antimicrobial, antibacterial, antiviral, antidiabetic, anticancer, cytotoxic effects, among others. The DU-145 cell line is derived from human prostate cancer cells and is widely used in research and treatment studies related to prostate cancer. Apoptosis is a natural process that signifies programmed cell death. In this study, the apoptosis method was employed, which involves staining cells with a dye obtained by mixing *Acridine Orange* and *Ethidium Bromide* in a 1:1 ratio, where live cells appear green and dead cells appear red under fluorescent microscopy. The viability of cells was assessed by examining their condition under a fluorescent microscope. The study observed differences between live and dead cells in DU-145 cells treated with increasing doses of *R. ribes* extract, noting a transition from green to red as the dose increased. In conclusion, this study has been significant in demonstrating the cytotoxic effects of *R. ribes* extract against DU-145 cancer cells.

Keywords: DU-145, *Rheum ribes* L., Apoptosis Method

RHEUM RIBES L. EKSTRATININ *ALLIUM CEPA* KÖK UCU MERİSTEM HÜCRELERİ ÜZERİNDE H₂O₂'NUN TOKSİK ETKİLERİNE KARŞI KORUYUCU ROLÜNÜN BELİRLENMESİ

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ÖZET

Allium cepa L. (soğan) kök ucu meristem hücrelerinin hidrojen peroksit (H_2O_2) toksisitesine karşı *Rheum ribes* L. (ışkın otu) ekstratının koruyucu etkileri incelenmiştir. H_2O_2, dezenfektanlardan kozmetik ürünlere kadar çeşitli alanlarda kullanılan oksitleyici bir maddedir ve toksisiteye neden olabilir. *R. ribes* bitkisi ise, Polygonaceae ailesinden olan çok yıllık bir bitkidir ve birçok biyoaktiviteye sahiptir. Bu bitkinin antidiyabetik etkisi bilinmektedir. *R. ribes* ekstraktı, fenolik bileşen profili ve içerdikleri flavonoid yapıları sayesinde potansiyel bir antioksidan kaynağı olarak değerlendirilmektedir. *R. ribes*, Doğu Anadolu Bölgesi'nde Nisan - Mayıs aylarında yaygın olarak doğadan toplanarak tüketilen ve batıdaki illere de büyük miktarlarda gönderilen önemli bir ticari üründür. Geleneksel tıpta ve farmakolojide çeşitli alanlarda kullanılmaktadır. Araştırmada, artan H_2O_2 dozları ve *R. ribes* ekstratı ile muamele edilen köklerde ölü ve canlı hücreler arasındaki farklar Evans Blue boya ile belirlenmiştir. Stereo mikroskop altında köklerdeki boya yoğunluğu incelenerek hücrelerin canlılık seviyesi belirlenmiştir. Yüksek doz H_2O_2 uygulanan köklerde belirgin ölü hücrelerin tespit edilmesiyle toksisitenin etkileri gözlemlenmiştir. Bu çalışma, ışkın otunun toksik maddelere karşı koruyucu olduğunun ortaya konulmasında önemli olmuştur.

Anahtar Kelimeler: Hidrojen peroksit, Işkın Otu, Canlılık Testi

DETERMINATION OF THE PROTECTIVE ROLE OF *RHEUM RIBES* EXTRACT AGAINST THE TOXIC EFFECTS OF H$_2$O$_2$ ON *ALLIUM CEPA* L. ROOT TIP GERM CELLS

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ABSTRACT

The protective effects of *Rheum ribes* L. (ragweed) extract against hydrogen peroxide (H$_2$O$_2$) toxicity on *Allium cepa* L. (onion) root tip meristem cells were investigated. H$_2$O$_2$ is an oxidizing agent used in fields ranging from disinfectants to cosmetics and can be toxic. *R. ribes* is a perennial plant from the Polygonaceae family known for its various bioactivities. It is recognized for its antidiabetic effects, and its extracts are considered potential sources of antioxidants due to their phenolic components and flavonoid structures. *R. ribes* is commercially important and extensively harvested from the wild in the Eastern Anatolia Region in April-May, then distributed to western provinces in large quantities. It is used in traditional medicine and pharmacology across various fields. In the study, the differences between dead and living cells in roots treated with increasing doses of H$_2$O$_2$ and *R. ribes* extract were determined using Evans Blue dye. The viability of cells was assessed by examining the dye intensity in the roots under a stereo microscope. The toxic effects were observed by identifying significant numbers of dead cells in roots treated with high doses of H$_2$O$_2$.

Keywords: Hydrogen peroxide, *Rheum ribes* L., Viability assay

MICROBIAL BASED PRODUCTS: EXOPOLYSACCHARIDES

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Abstract

Carbohydrates, which are abundant in nature, are one of the macromolecules of great importance for life. It consists of four main groups according to the sugars, which would be monosaccharides, disaccharides, trisaccharides and polysaccharides. Polysaccharides are renewable and biocompatible polymers and can be synthesized by different kind of organisms. The most important sources of polysaccharides are plants, animals and microorganisms. However, microorganisms are preferred in the production of polysaccharides compared to plants and animals for many reasons such as their rapid growth, easier control of culture conditions, ability to grow on cheap substrates and easier product extraction. Some of the microbial exopolysaccharides which are commercially produced and have great functional importance are cellulose, levan, pullulan, xanthan, gellan, alginate and hyaluronic acid. Microbial exopolysaccharides are considered to be environmentally friendly molecules because they are renewable, biocompatible and biodegradable in nature. Due to these advantageous aspects, microbial exopolysaccharides finds several applications in a wide variety of industries from food to cosmetics as a stabilizer, emulsifier, viscosifier, gelling agent, water binder and encapsulation agent. The current study provides an overview on the properties of microbial exopolysaccharides and their applications.

Keywords: Macromolecules, Exopolysaccharides, Structure, Application

BİREYLERİN TIBBİ BİTKİ KULLANIMINA İLİŞKİN BİLGİ VE DÜŞÜNCELERİ; HATAY İLİ ÖRNEĞİ

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ÖZET

Tıbbi bitkiler insan beslenmesi ve sağlığı bakımından önemli bir yere sahiptir. Bu bitkiler gıda amaçlı kullanımının yanı sıra, şifası bilinen ve birçok hastalığın tedavisinde kullanılmaktadır. Bu çalışmanın amacı, Hatay ilinde bireylerin tıbbi bitkiler ve kullanımına ilişkin düşüncelerini ortaya koymaktır. Araştırmanın ana materyali, Hatay ilinde 2022 yılında 414 kişi ile yüz-yüze anket çalışması yapılarak elde edilmiştir. Araştırmada, bireylerin demografik bilgilerinin yanı sıra, tıbbi bitki bilgisi ve kullanımı, tıbbi bitki kullanımına ilişkin bilgi kaynakları, bitkilerin toplanma zamanı ve muhafazasına ilişkin bireylerin düşünceleri incelenmiştir. Araştırmaya katılan bireylerin yaklaşık 2/3'ü tıbbi bitki kavramını bilmektedir. Bireyler tıbbi bitkileri genellikle aktarlardan aldığını bildirirken; internetten, marketten satın alan ve hatta kendi üreten ve doğadan toplayanların olduğu belirlenmiştir. Ayrıca, bireyler baharat, çay, kozmetik, süs bitkisi olarak bu tıbbi bitkileri yetiştirdiğini ve tedavi amacıyla; cilt hastalıkları, grip-soğuk algınlığı, kırık-çıkık tedavisinde ve ağrı kesici olarak kullandığını belirtmiştir. Hatay ilinin tıbbi bitkiler açısından zengin olması tıbbi bitkilerin faydalarına ve kullanımına ilişkin yayım faaliyetlerini zorunlu kılmaktadır. Ayrıca bu bitkilerin bilinçli tüketimine ilişkin bilimsel toplantılar artırılmalı, eğitim ve seminer gibi faaliyetler düzenlenerek tüketiciler bilgilendirilmelidir.

Anahtar Kelimeler: Tıbbi bitki, sağlık, tüketici düşünceleri, Hatay.

KNOWLEDGE AND VIEWS OF INDIVIDUALS ON THE USE OF MEDICINAL PLANTS; THE CASE OF HATAY

ABSTRACT

Medicinal plants have an important place in human nutrition and health. Besides being used for food, these plants are known to heal and are used in the treatment of many diseases. The aim of this study is to reveal the opinions of individuals in Hatay province about medicinal plants and their use. In 2022, the main material of the research was obtained by conducting a face-to-face survey with 414 people in Hatay province. In the study, besides the demographic information of the individuals, the knowledge and use of medicinal plants, sources of knowledge on the use of medicinal plants, individuals' views on the collection time, and preservation of plants were examined. Approximately 2/3 of the individuals participating in the research know the concept of medicinal plants. While individuals reported that they usually buy medicinal plants from herbalists, it was determined that there were also individuals who bought medicinal plants from the internet, markets, and even those who produced and collected them from nature. Additionally, individuals reported growing these medicinal plants as spices, tea, cosmetics and ornamental plants. Moreover, it was reported that medicinal plants were used to treat skin diseases, flu and colds, fractures and dislocations and as painkillers. The fact that Hatay province is rich in medicinal plants necessitates extension activities on the benefits and use of medicinal plants. Also, scientific meetings on the conscious consumption of these plants should be increased and consumers should be informed by organizing activities such as trainings and seminars.

Keywords: Medicinal plants, health, consumer views, Hatay.

TÜRKİYEDE SOYA ÜRETİMİNİN YILLAR İTİBARİYLE DEĞİŞİMİ VE DÜNYADAKİ YERİ

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ÖZET

Soya, tarım sektöründe önemli bir yere sahip olan yağlı tohumlu bir bitkidir. Zengin B vitamini içeriği sayesinde besleyici bir gıda olarak öne çıkmaktadır. Ayrıca soya, pek çok sanayi kolunun hammaddesi olarak kullanılmaktadır. Türkiye'de soyanın beslenme için önemi göz önüne alındığında, yağlı tohumların tüketiminin giderek arttığı görülmektedir. Bu çalışmanın amacı, dünya soya üretiminde Türkiye'nin yerini ve bölgelere göre dağılımını belirlemek ve son yıllardaki değişimini üretim ve dış ticaret bakımından ortaya koymaktır. 2023/24 yılında dünyada yaklaşık 139.4 milyon hektarlık bir alanda 396 milyon tonun üzerinde soya üretimi gerçekleştirilmiştir. Brezilya, ABD ve Arjantin gibi ülkeler dünya soya üretiminde lider konumdadır. 2023/24 pazarlama yılında dünya toplam soya ihracatı yaklaşık 170 milyon ton olarak gerçekleşmiştir. Türkiye'de ise 2023/24 yılında yaklaşık 138 bin ton soya üretimi gerçekleştirilmiş olup; soya üretiminde Adana, Mersin, Kahramanmaraş, Osmaniye, Samsun ve Hatay ili dikkat çekmektedir. Son yıllarda yağlı tohumlara verilen önemin artması ile Türkiye, soya fasulyesi üretimini artırarak hem kendi ihtiyacını karşılayabilecek hem de küresel piyasalarda rekabet avantajı elde edebilecektir. Bu yönde atılacak adımlar, tarım sektörünün sürdürülebilirliği ve ülke ekonomisi için oldukça önemlidir.

Anahtar Kelimeler: Soya, üretim, pazarlama, ticaret, Türkiye.

THE CHANGE OF SOYBEAN PRODUCTION IN TÜRKİYE AND ITS PLACE IN THE WORLD

ABSTRACT

Soybean is an oilseed plant that has an important place in the agriculture sector. Thanks to its rich vitamin B content, it stands out as a nutritious food. Additionally, soybean is also used as a raw material in many industries. Taking into account the nutritional importance of soybean in Türkiye, the consumption of oilseeds is gradually increasing. The aim of this study is to determine the position of Türkiye in world soybean production and its distribution by regions. Besides, it is to reveal the changes in recent years in terms of production and foreign trade. In 2023/24, over 396 million tons of soybean is produced in an area of approximately 139.4 million hectares in the world. Countries such as Brazil, the USA and Argentina are the world leaders in soybean production. In the 2023/24 marketing year, total world soybean exports amounted to 170 million tons. In Türkiye, approximately 138 thousand tons of soybean production was realized in 2023/24. Additionally, the provinces of Adana, Mersin, Kahramanmaraş, Osmaniye, Osmaniye, Samsun and Hatay stand out in soybean production in Türkiye. In recent years, with the increasing importance given to oilseeds, Türkiye will be able to meet its own needs by increasing soybean production. Thus, it will be able to gain a competitive advantage in global markets. As a results, the steps to be taken in this direction are very important for the sustainability of the agricultural sector and the national economy.

Keywords: Soybean, production, marketing, trade, Türkiye.

PASLANMAZ ÇELİĞİN LAZER İLE KESİLMESİNDE GEOMETRİK TOLERANS ANALİZİ

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ÖZET

Lazer ışını ile kesme metalik sac veya plakalarda karmaşık geometrili profil veya deliklerin oluşturulmasında yaygın olarak kullanılan bir alışılmamış imalat yöntemidir. Bu kesme teknolojisinde gaz türü, odak noktası, gaz basıncı ve kesme hızı gibi birçok işleme parametresi çaptan sapma, diklik, koniklik, dairesellik gibi geometrik toleransları doğrudan etkilemektedir. Bu çalışmada, ferritik paslanmaz çeliğin fiber lazer ile delinmesinde odak noktası (Fp), gaz basıncı (P) ve ilerleme hızının (f) çaptan sapma ve diklik toleransı (performans göstergeleri) değişimleri analiz edilmiştir. Fiber lazer ile kesme deneyleri L_9 dikey dizini kullanılarak yapılmıştır. Varyans analizi (ANOVA) ile performans göstergeleri üzerinde işleme parametrelerinin etki düzeyleri ölçülmüştür. Tüm delik çaplarının nominal çaptan fazla olduğu belirlenmiş olup, bu sonuç çoğunlukla yüksek basınçlı kesmede lazer güç yoğunluğunun artmasına atfedilmiştir. Lazer ile sürecinde, çaptan sapma için en etkili parametre %57.53 PCR ile ilerleme hızı olurken, diklik toleransı için bu parametre %49.72 PCR ile odak noktası çıkmıştır. En büyük sapma değeri, -3 mm odak noktası, 2000 mm/dak ilerleme hızı ve 18 bar gaz basıncında oluşurken, en büyük diklik toleransı -4 mm odak noktası, 1200 mm/dak ilerleme hızı ve 15 bar gaz basıncında ölçülmüştür. Bu sonuç, performans göstergeleri için optimum parametrelerin farklı olabileceğini ve dolayısıyla lazer ile kesmede çok değişkenli optimizasyon yönteminin kullanılması gerektiğine işaret etmektedir.

Anahtar Kelimeler: Lazer, Delme, Odak noktası, Geometrik tolerans, Çaptan sapma

SEMENTE KARBÜRÜN DALMA EROZYONLA İŞLENMESİNDE BOYUTSAL DOĞRULUĞUN ARAŞTIRILMASI

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ÖZET

Semente karbürün (WC-Co) geleneksel talaşlı imalat yöntemleri ile işlenmesi çok zordur. Bu nedenle, elektro erozyon ile işleme (EDM), tel erozyon ile kesme gibi geleneksel olmayan talaşlı imalat yöntemleri ile daha kolay şekillendirilmektedir. Bu çalışmada, WC-Co malzemenin EDM ile işlenmesinde ölçü tamlığının işleme parametrelerine göre değişimleri incelenmiştir. Bu bağlamda, silindirik geometrideki tungsten karbür malzeme üzerine EDM ile açılan kama yuvasının ölçüleri kontrol edilerek en uygun işleme şartları araştırılmıştır. İşleme parametresi olarak üç farklı seviyede boşalım akımı (Ip), vurum süresi (Ton) ve vurum aralığı (Toff) seçilmiştir. İşleme deneyleri, Taguchi L9 deney tasarımına göre bakır elektrotlar kullanılarak gerçekleştirilmiştir. Kama yuvası boyutları; derinlik (D), genişlik (W) ve uzunluk (L) ölçümleri bir koordinat ölçüm makinesi ile yapılmıştır. Deneyler sonucunda, derinlikte daha büyük sapmalar oluşurken, genişlik ve uzunluk ölçülerinde en büyük sapma değeri %2.2 ve %0.4 olarak ölçülmüştür. Derinlikteki büyük sapma değeri elektrotun daha çok alın yüzeyinde oluşan aşınmaya bağlanmıştır. Varyans analizine (ANOVA) göre, D ve W ölçülerinde en etkili parametre boşalım akımı olurken, L ölçüsünde bu parametre vurum aralığı olarak belirlenmiştir. Bu bağlamda, özellikle EDM gibi çok karmaşık talaşlı imalat uygulamalarında optimum işleme parametrelerinin belirlenmesi amacıyla tam faktöriyel deney tasarımları önerilmektedir.

Anahtar Kelimeler: WC-Co, EDM, Ölçü tamlığı, ANOVA

YÜKSEK YOĞUNLUKLU POLİETİLEN (HDPE) PLASTİK ATIKLARIN SERYUM DİOKSİT İLE YENİ BİR POLİMER NANOKOMPOZİT OLARAK YENİDEN KULLANILMASI

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ÖZET

Yeni bir polimer nanokompozit üretmek için yüksek yoğunluklu polietilen (HDPE) plastiğin seryum dioksit (CeO_2) ile yeniden kullanımı gerçekleştirildi. Bu nanokompozit bazı ambalaj malzemelerinin üretiminde bileşen olarak kullanıldı. HDPE-CeO nanokompozitinin mikro yapısı, taramalı elektron mikroskobu (SEM) analizi, enerji dağılımlı X-ışını spektroskopisi (EDS) analizi ve X-ışını kırınımı (XRD) analizi ve Termogravimetrik analiz (TGA) ile karakterize edildi. HDPE ve CeO konsantrasyonlarının, zaman, sıcaklık ve nanokompozit konsantrasyonlarının ambalaj malzemesinin fiziksel ve termal özelliklerine etkisi araştırıldı. Artan güneş ışığı gücünün (9, 15, 25, 30 ve 40 W/m^2), fotooksidasyon süresinin (10 dk, 20, 30 ve 40 dk), pH'ın (6.0, 7.0 ve 8.0), sıcaklığın (22ºC, 35ºC ve 45ºC) etkileri, seryum dioksit (2, 4, 6, 8 ve 10 mg/l) ve yüksek yoğunluklu polietilen (HDPE) (100, 200, 500, 800, 1000, 1200 ve 1400 mg/l) konsantrasyonlarının fotodegradasyona etkisi HDPE verimleri araştırıldı. Nanokompozitin yüzey özellikleri XRD, SEM ve FTIR analizleri ile araştırıldı. HDPE'nin maksimum ışıkla bozunma verimi (%99) için optimum çalışma koşulları 30 W/m^2 UV gücü, 30 dakika ışıkla bozunma süresi, pH=8.0, 35ºC sıcaklık, 2 mg/l CeO_2 nanokompozit ve 1200 mg/l HDPE konsantrasyonuydu.

Anahtar Kelimeler: Yüksek Yoğunluklu Polietilenin (HDPE) Geri Dönüşümü, Plastik atıklar, Seryum dioksit, Polimer nanokompozit.

REUSE OF HIGH-DENSITY POLYETHYLENE (HDPE) PLASTIC WASTES WITH CERIUM DIOXIDE AS A NEW POLYMER NANOCOMPOSITE

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ABSTRACT

Reuse of high-density polyethylene (HDPE) plastic with cerium dioxide (CeO_2) was performed to produce a new polymer nanocomposite. This nanocomposite was used as a component in the producing of some packaging materials. The microstructure of the HDPE-CeO nanocomposite was characterized by scanning electron microscopy (SEM) analysis, energy dispersive X-ray spectroscopy (EDS) analysis and X-ray diffraction (XRD) analysis and Thermogravimetric analysis (TGA). The effects of HDPE and CeO concentrations, time, temperature and nanocomposite concentrations on the physical and thermal properties of the packaging material was investigated. The effects of increasing sun light power (9, 15, 25, 30 and 40 W/m^2), photooxidation time (10 min, 20, 30 and 40 min), pH (6.0, 7.0 and 8.0), temperature (22^oC, 35^oC and 45^oC), cerium dioxide (2, 4, 6, 8 and 10 mg/l) and high-density polyethylene (HDPE) (100, 200, 500, 800, 1000, 1200 and 1400 mg/l) concentrations on the photodegradation yields of HDPE was investigated. The surface properties of the nanocomposite was investigated by the XRD, SEM and FTIR analysis. For maximum photodegradation yields of HDPE (99%) the optimum operational conditions were 30 W/m^2 sun light power, 30 min photodegradation duration, pH=8.0, 35^oC temperature, 2 mg/l CeO_2 nanocomposite and 1200 mg/l HDPE concentration.

Keywords: Recycling of High-density Polyethylene (HDPE), Plastic wastes, Cerium dioxide, Polymer nanocomposite.

DEPREM ÖNCESİ VE SONRASI UYDU VERİLERİ KULLANILARAK DEPREM HASARLARININ TESPİTİ

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ÖZET

Depremler sonrasında meydana gelen hasarların belirlenmesi ve hızlı bir şekilde müdahale edilmesi gerekmektedir. Bu nedenle araştırmacılar hızlı bir şekilde hasar tespiti yapılabilmesi için farklı yöntemler üzerine çalışmalar yapmışlardır. Uydu görüntüleri kullanılarak yapay zekâ yardımıyla bölgenin hasar dağılımının belirlenmesi bu yöntemlerden biridir. Deprem öncesi ve sonrasındaki uydu görüntüleri arasındaki değişimler yardımıyla depremin meydana geldiği bölgedeki hasar durumları hızlı bir şekilde belirlenebilir. Hasar tespitinin böyle yöntemlerle hızlı bir şekilde yapılabilmesi, deprem sonrası müdahalenin süresini kısaltmaktadır. Bu çalışmada 6 Şubat 2023'te meydana gelen Kahramanmaraş depremleri sonrasındaki hasarların belirlenebilmesi için uydu görüntülerinden yararlanılmıştır. Çalışma sahası olarak depremden etkilenen şehirlerden biri olan Hatay ili Antakya ilçesi belirlenmiştir. Antakya için deprem öncesi ve sonrası uydu görüntüleri alınarak yapay zekâ yardımı ile hasarlı bölgeler ve hasar oranları belirlenmiştir. Elde edilen sonuçlar farklı tarihlerdeki uydu görüntüleri üzerinden değerlendirilmiştir. Depremin hemen sonrasında alınan uydu görüntüleri ile 1 yıl sonrasında alınan uydu görüntüleri arasında tespit edilen yapısal hasar oranları arasında farklılıklar tespit edilmiştir. Bunun nedeninin deprem sonrasında süre geçtikçe acil yıkılması gereken veya ağır hasarlı binaların bölgeden temizlenmesi olduğu görülmüştür. Ayrıca elde edilen sonuçlar saha taraması sonucunda elde edilen hasar tespit oranları ile karşılaştırılmıştır. Tamamen yıkılmış veya acil yıktırılması gereken binaların toplam bina sayısına oranı depremin hemen sonrasındaki uydu görüntüleri sonuçları ile örtüşürken, ağır, orta, acil yıktırılması gereken ve tamamen yıkılmış binaların sayısının toplam bina sayısına oranı ise depremden 1 yıl sonra elde edilen uydu görüntüleri ile yüksek uyum sağlamaktadır.

Anahtar Kelimeler: Hasar Tespiti, Uydu Görüntüleri, Yapay Zekâ, Deprem.

DETECTION OF EARTHQUAKE DAMAGE USING PRE AND POST EARTHQUAKE SATELLITE DATA

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ABSTRACT

Damages occurring after earthquakes need to be identified and intervened quickly. For this reason, researchers have studied different methods to quickly detect damage. Determining the damage distribution of the region with the help of artificial intelligence using satellite images is one of these methods. With the help of changes between satellite images before and after the earthquake, damage conditions in the region where the earthquake occurred can be quickly determined. Damage assessment can be done quickly using such methods, which shortens the duration of post-earthquake intervention. In this study, satellite images were used to determine the damages after the Kahramanmaraş earthquakes that occurred on February 6, 2023. Antakya district of Hatay province, one of the cities affected by the earthquake, was determined as the study area. Satellite images were taken for Antakya before and after the earthquake and damaged areas and damage rates were determined with the help of artificial intelligence. The results obtained were evaluated on satellite images of different dates. Differences were detected between the structural damage rates detected between the satellite images taken immediately after the earthquake and the satellite images taken 1 year later. It was observed that the reason for this was that as time passed after the earthquake, buildings that needed to be urgently demolished or heavily damaged were removed from the region. Additionally, the results obtained were compared with the damage detection rates obtained as a result of field scanning. While the ratio of buildings that have been completely demolished or need to be demolished urgently to the total number of buildings matches the results of satellite images immediately after the earthquake, the ratio of the number of heavy, medium, buildings that need to be demolished urgently and completely collapsed to the total number of buildings is in high agreement with the satellite images obtained 1 year after the earthquake.

Keywords: Damage Detection, Satellite Images, Artificial Intelligence, Earthquake.

SONLU ELEMANLAR YÖNTEMİ (FEM) İLE BİR TAMPON PARÇASININ ENJEKSİYON SONRASI ÇARPIKLIK TAHMİNİ

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ÖZET

Enjeksiyon kalıplamada çarpıklık, kalıplanmış bir plastik parçanın, genellikle enjeksiyon kalıplama döngüsündeki soğutma işlemi sırasında ortaya çıkan deformasyonudur. Çarpılma, özellikle ince cidar ve uzun parçaların plastik enjeksiyon kalıplamasında sık karşılaşılan kalite sorunlarından biri olarak karşımıza çıkar. Bu problem çoğu zaman engellenemez ancak, belirli toleranslar, geometrik limitler içinde tutulabilir. Bu tolerans bandının genişliğinin tahmini, yani deformasyon miktarı kalıp imalatçısı tarafından mutlaka ön görülmelidir. Bu kapsamda, elbette kalıp üzerinde iyi tasarlanmış bir soğutma ağına ek olarak, geometriye eklenen federler, bunların konumları ve et kalınlıkları etkili olmaktadır.

Bu çalışmada, ön tampon parçası tutucu fikstür vazifesi gören polipropilen (PP) malzemeden üretilen hedef bir geometri üzerinde, Solidworks Plastics yazılımı vasıtasıyla çarpılma analizleri gerçekleştirildi. Çalışmada öncelikle PP malzeme için bir çarpılma analizi gerçekleştirildi. Çıkan analiz sonuçlarına göre, üreticinin daha düşük sapma oranları talebi nedeniyle PP malzemenin, %30 elyaf dolgulu durumu üzerinde de analizler gerçekleştirildi. Çıkan çarpılma analizlerinde, elyaf dolgusunun çarpılma üzerinde olumlu etkileri gözlendiğinden, parça %30 dolgulu olarak üretildi. FEM simülasyonuna göre elde edilen çarpılma sonuçlarını, enjeksiyon baskı ile üretilen gerçek parça ile mukayese etmek için, imal edilen parça optik bir tarayıcı ile tarandı. Geomagic Control X yazılımı vasıtasıyla, analiz sonucundaki çarpılma ile elde edilen 3D geometri ile optik tarama sonuçlarından elde edilen 3D ağ yapısı mukayese edilerek, yakınsama oranları bu çalışma ile sunulmaktadır.

Anahtar Kelimeler : Plastik enjeksiyon, Çarpıklık, Çarpılma simülasyonu, Solidworks Plastics, Sonlu elemanlar analizi (FEM)

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ESTIMATION OF WARPAGE OF A BUMPER PART AFTER PLASTIC INJECTION PROCESS BY USING FINITE ELEMENT METHOD (FEM)

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ABSTRACT

Warpage is the deformation of an injecting molded plastic part, usually occurring during the cooling process in the injection molding cycle. Warpage is a common quality problem, especially in injection molding of thin-walled and long parts. This problem cannot be prevented most of the time, but it can be kept within certain tolerances within geometric limits. The estimation of the band width of this tolerance band, in other words the amount of part deformation, must be predicted by the mold manufacturer. In this context, of course, in addition to a well-designed cooling network on the mold, the ribs added to the geometry, their positions and wall thicknesses are also important.

In this study, warpage analysis was performed on a target geometry of polypropylene (PP) material, which serves as a front bumper part holding fixture by using Solidworks Plastics software. In the study, a warpage analysis was first performed for the PP material. According to the analysis results, due to the manufacturer's demand for lower deflection rates, the analysis was also carried out on the PP material with 30% fiber filling. Since the resulting warpage analysis showed positive effects of fiber filling on the warpage, the part was produced with 30% filling. In order to compare the warpage results obtained from the FEM simulation with the actual part produced by injection molding, the manufactured part was scanned with an optical scanner. By utilizing Geomagic Control X software, the 3D geometry obtained from the distortion of the analysis result and the 3D mesh structure obtained from the optical scan data are compared and the convergence rates are presented in this study.

Key Words : Plastic injection, Warpage , Warpage simulation, Solidworks Plastics, Finite element method (FEM)

OFİS KOLTUĞU TASARIMINDA YAPISAL BÜTÜNLÜĞÜN SAĞLANMASI: KAPSAMLI BIR ANALİZ

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ÖZET

Ofis koltukları modern çalışma hayatımızın vazgeçilmez bir parçasıdır. Bu çalışmada, ofis mobilyaları üreten Ersa Mobilya ürün gamında yer alması planlanmış olan yeni bir ofis koltuğunun (Ersa Pan) yapısal bütünlük kriterleri ile gerçekleştirilen tasarım sürecinden bahsetmektedir. Bir ofis koltuğu için yapısal bütünlük kavramı, koltuğun, kullanıcının ağırlığını ve hareketini bozulmadan veya kırılmadan destekleme kabiliyetini ifade eder. Bir ofis koltuğunun yapısal bütünlüğünün korunması güvenlik, konfor ve uzun ömürlülük için gereklidir. Bu çalışma ile tasarlanan ofis koltuğunda analiz edilen yapısal bütünlük kavramı, Ergonomik Tasarım, Çerçeve Mukavemeti, Eklem Stabilitesi, Malzeme Kalitesi olarak 4 ana başlıktaki tasarım kriterlerini içerir. Bu çalışmada ise çerçeve mukavemeti ve ergonomik tasarım sanal prototipleme (CAD) için asıl tasarım kriterleri olarak kullanılmıştır. Diğer tasarım kriterleri ise firmanın tasarım geçmişinden gelen tecrübelerle, aslında standartlaşmış ve ölçülebilir olmayan nitelikler olarak tasarım sürecine etki etmektedir.

Ergonomik Tasarım, koltuğun formunu ve işlevselliğini korumasını ve zaman içinde uygun desteği sağlamasını temin etmek için gereklidir. Literatürde, antropometrik veriler ve dolayısıyla ergonomi analizi gözardı edilerek tasarlanan ofis sandalyelerinin, kas-iskelet sistemi rahatsızlıkları, bel ve sırt ağrıları gibi fiziksel sağlık sorunlarının başlıca nedenlerinden biri olarak öne çıktığı gözlenmektedir. Dolayısıyla, ofis mobilyalarının ergonomik standartlara uygun olarak tasarlanması, hem çalışan sağlığı hem de iş verimliliği açısından kritik bir öneme

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sahiptir. Dolayısıyla bu çalışma ile sunulacak olan koltuk tasarım sürecinde, ergonomi kriteri için ilgili TS EN 1335-1 ve TS EN 1335-2 standartları referans alınmıştır.

Yapısal bütünlük için bir diğer tasarım kriteri ise çerçeve mukavemetidir. Çerçeve mukavemeti, koltuk çerçevesinin günlük kullanımı ve çeşitli ağırlık yüklerini kaldırabilecek sağlamlıkta olmasını temin etmelidir. Bu amaçla, gerçekleştirilen sanal prototip (CAD) üzerinde ise, Solidworks Simulation yazılımı vasıtasıyla bir dizi sonlu elemanlar analizi (FEM) gerçekleştirildi. Böylelikle bu çalışma ile, sanal prototipin dayanım/ağırlık oranı analiz edilerek, iyileştirmeler yapıldı. Ticarileştirilecek olan ofis koltuğunun, sanal prototipleme aşamasında, yapısal bütünlük kriteri ile yürütülen bu tasarım faaliyetleri çalışma ile sunulacaktır.

Anahtar Kelimeler : Yapısal bütünlük, Ofis koltuğu tasarımı, Ergonomi, Sonlu elemanlar analizi (FEM)

RISK ANALYSIS WITH L-TYPE MATRIX AT THE FACILITY WHERE MEDICAL MATERIAL PRODUCTION IS CARRIED OUT AS A HAZARDOUS WORKPLACE

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ABSTRACT

In this study, a risk analysis study was conducted using the L-Type Matrix method at the facility where gas power plants, air power plants, vacuum power plants, AGSS (anesthesia gas evacuation systems), regional service units, alarm systems, hospital equipment are manufactured as medical materials. The following are the equipment used in the production of machines. The equipment in polishing machine, welding and metal section is aspar hydraulic press, CNC saw, pipe bending machine, CNC bending machine, press brake press machine, bolt stud and welding machine, laser marking machine, assembly section, transpak packaging machine, cicinnati universal milling machine, injection molding machine, plastic injection molding machine, sharpening stone. In this study, a high-risk unit was identified by increasing the current risk score between 15 and 25. Firstly, in the unit where the risk is high, the polishing machine and the equipment used in the welding metal section are not suitable for work, electric shock, lack of protective equipment, lack of proper PPE(personal protective equipment), lack of necessary warning signs in the area where the work is performed, maintenance repairs and controls are not performed on time, the machines are working while the controls are being performed, unauthorized use, defective machine cables, lack of grounding, lack of clean and tidy working area, the employee does not wear appropriate clothes during work   the risks are high due to the workpieces not being fully connected, fluids damaging the skin, fluids spilling to the ground, the machine being welded with bolts and studs not being kept properly,

overheating of the machine during long-term operation, open electrical panels, radiation and radiation exposure, lack of press part protector, manual handling of hot material, lack of radiator fan protector, lack of insufficient lightingThe necessary risk preventive studies have been carried out in places where the risk is high and the current high risk value has been minimized. These protective and preventive studies are as follows: the use of undamaged tools suitable for work, the use of tools without grounding, ensuring the use of the protectors of the equipment used, necessarily providing training before the use of machines, the use of machines only by authorized persons, ensuring the use of PPE, placing appropriate warning and warning signs in the study area, timely periodic maintenance, renewal of defective cables, ensuring the wearing of appropriate clothing during work, the risk value has been reduced to 1-4 levels by working the fluids used in the machines with gloves, ensuring the floor is clean and suitable, using heat-resistant gloves, using appropriate PPE when working with welding, ventilating the environment, and having the emergency buttons working Jul.

Keyword: Risk in medical equipment production, L-type matrix, safety measures

AN EXAMPLE OF A RISK ANALYSIS STUDY WITH AN L-TYPE MATRIX WITHIN THE SCOPE OF SAFETY MEASURES IN THE PRODUCTION OF MEDICAL EQUIPMENT

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ABSTRACT

In this study, a risk analysis study was conducted using the L-Type Matrix method at the facility where gas and electrical modules, bedside patient service units, intensive care units, bridge-type intensive care units, pendants, medical gas sockets, flowmeters, pressure and flow regulators, vacuum adapters, pressure reducers, monitor stands, connection equipment were manufactured as medical materials. This method is based on the fact that the probability of being in a danger situation is examined by giving numerical values in the evaluation of the result after the event. Pre-prepared questions are given to employees at the place where the risk analysis will be performed. The participation of employees in this study is important. In this study, it was determined that the current risk score was between 15 and 25, which constitutes a high risk. In the unit where the risk is high, firstly, where spiral grinding is performed, as a hazard, using an unsuitable tool for work, electric shock, not using the tool housing, not using appropriate PPE(personal protective equipment), while using a compressor, noise, vibration, lack of periodic maintenance, lack of a safety valve, use without housing, hazards present in the manufacture of 600 kg carascal, rope breakage, lack of grounding, defective cable use, hazards present in the use of a 3-ton ozmaksan parallel crane, rope rupture, electric shock, injury and death, the dangers present in the production of Jul-like milling, the lack of clean and tidy working area, the machine does not work without protection, the machine cables are defective, grounding is not performed, the workpiece is not fully connected, the dangers present in the

CNC machine, periodic maintenance is not performed, the dangers present in the sharpening stone, the risks are high due to broken, deformed cable. The necessary risk preventive studies have been carried out in places where the risk is high and the current high risk value has been minimized. These protective and preventive studies are as follows: ensuring the use of cables suitable for work, installing them by checking if the equipment used also needs to be maintained, ensuring the use of authorized persons, ensuring the use of PPE suitable for work, installing hazard warning signs, providing regular training, hanging instructions for the use of devices used, performing necessary periodic maintenance, grounding, making work clothes suitable for work, the risk value has been reduced to 1-5 level by controlling the operation and stop buttons where the machines are working.

Keyword: Risk in medical material production, L-type matrix, safety measures

DEPRESYONUN ELEKTROENSEFALOGRAFİ SİNYALLERİ KULLANARAK SINIFLANDIRILABİLMESİ İÇİN SİNYAL İŞLEME VE YAPAY ZEKA YÖNTEMLERİ İÇEREN BİR YAKLAŞIM

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ÖZET

Dünya Sağlık Örgütü'ne göre depresyon gibi ruhsal bozukluklar küresel sağlık problemlerinin önde gelen sebeplerinden biri olarak ön plana çıkmaktadır. Bu çalışmada, EEG sinyallerinden elde edilen özellikler ve makine öğrenimi algoritmalarını kullanarak depresyonlu ve sağlıklı bireylerin sınıflandırma performansı analiz edilmiştir. Bu amaçla, dinlenme ve görev durumunda kaydedilen 128 kanallı EEG verilerinin analizi için sinyallerin zaman, frekans, doğrusal ve doğrusal olmayan özellikleri elde edilmiştir. Veri ön işleme aşamasında Sonlu Dürtü Yanıtlı (Finite Impulse Response, FIR) süzgeçler kullanarak filtreleme işlemleri ve Bağımsız Bileşenler Analizi (Independent Component Analysis, ICA) gibi tekniklerin uygulanması ile sinyallerdeki gürültüler ortadan kaldırılmıştır. Özellik seçimi için En Küçük Mutlak Büzülme ve Seçim Operatörü (Least Absolute Shrinkage and Selection Operator, LASSO) yöntemi kullanılmış ve toplam 4191 öznitelik arasından en bilgilendirici olanları belirlenmiştir. Sınıf dengesizliği için Uyarlamalı Sentetik Örnekleme Yöntemi (Adaptive Synthetic Sampling Method , ADASYN) ile sentetik veri üretilmiş ve eğitim veri seti dengelenmiştir. Makine öğrenimi algoritmaları olan Yapay Sinir Ağları (Artificial Neural Network, ANN), Destek Vektör Makineleri (Support Vector Machine, SVM) ve K En Yakın Komşular (K-Nearest Neighbors, KNN) yöntemleri kullanarak sınıflandırma modelleri oluşturularak performansları karşılaştırılmıştır. Elde edilen sonuçlara göre, SVM ve ANN modelleri kullanılarak %100 doğruluk, hassasiyet, seçicilik ve kesinlik değerleri ile EEG sinyalleri yüksek performansla sınıflandırmıştır. Böylece bu çalışma ile depresyonun EEG sinyallerinden sınıflandırılmasına yönelik yüksek performanslı bir model ortaya konmuştur.

Anahtar Kelimeler: Depresyon, Yapay Zeka, Elektroensefalografi, Özellik Seçme, Makine Öğrenimi Algoritmaları, Sinyal İşleme

DOSE-DEPENDENT SEDATIVE EFFECTS OF CLONIDINE PREDOMINATE OVER ANTINOCICEPTION IN A RAT MODEL

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ABSTRACT

Background: Clonidine (CLO), an α-2 adrenoreceptor agonist, exhibits analgesic and sedative properties. This study investigated the dose-dependent antinociceptive and sedative effects of CLO in a rat model, with emphasis on effect onset, duration, and predominance.

Methods: Fifty-six male Wistar albino rats were randomized into seven groups (n=8 per group): control (0.9% NaCl) and six CLO groups receiving 25, 50, 75, 100, 150, or 200 µg/kg intraperitoneally. Antinociception was assessed via hot-plate test at baseline and 15, 30, 60, 90, and 120 minutes post-administration. Sedation was evaluated using rotarod performance test at baseline and 30, 60, 90, and 120 minutes post-administration.

Results: No statistically significant antinociceptive effects were observed across the CLO dose range. However, sedative effects were evident at doses ≥ 75 µg/kg, with dose-dependent increases in intensity. Sedation persisted up to 120 minutes post-administration, exhibiting progressive severity with increasing doses.

Conclusion: In this rodent model, CLO elicited predominant sedative effects without significant antinociception at the examined doses. The dose-dependent sedative effect impaired motor coordination and balance. These findings suggest that CLO's sedative effects supersede its antinociceptive properties within the tested dose range. Further investigations employing alternative methodologies are necessary to elucidate CLO's antinociceptive potential and optimize its clinical utility in pain management.

Keywords: Clonidine, Antinociception, Sedation, Dose-dependent effects, Motor coordination

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ÖZET

Geçmişten günümüze bal, polen, arı sütü, propolis ve bir tür bal arısı olan Apis mellifera'nın zehrini içeren arı ürünleri gıda veya ilaç olarak kullanılmaktadır. Bu ürünlerin hastalıkların tedavisinde kullanılmasına apiterapi adı verilmektedir.

Hymenoptera takımına ait böcekler, birçok biyolojik olarak aktif bileşiği içeren zehri savunma maddesi olarak kullanmaktadır. Özellikle bal arısı zehri, çeşitli hastalıklara karşı koruma sağlayan birçok etkili enzim, peptid ve aktif molekülden oluşur. Arı zehrinin ana bileşeni melittindir, bunun yanısıra histamin, dopamin, norepinefrin, apamin, adolapin, mast hücresi degranüle edici peptid, fosfolipaz A2, hiyalüronidaz gibi enzimler de içermektedir.

Çeşitli araştırmalar, bazı hastalıkların tedavisinde arı zehrinin in vivo veya in vitro olarak kullanılma etkili olabileceğini göstermektedir. Ayrıca arı zehrinin aktif fraksiyonlarının da klinik veya laboratuvar koşullarında etkinliği değerlendirilmiştir. Tüm bu çalışmaların sonucu olarak, arı zehri ve bileşenlerinin, anti-mikrobiyal, anti-artritik, anti-protozoan, anti-inflamatuar ve anti-kanser gibi birçok biyolojik aktivite gösterdiği belirtilmiştir.

Bu çalışmada, alternatif bir tedavi protokolü olarak çeşitli hastalıkların tedavisinde ve ilaç toksisitelerine karşı koymada arı zehrinin kendisinin veya fraksiyonlarının içeriğinin araştırılması amaçlanmıştır. Arı zehri ve bileşenlerinin yaygın ve güncel moleküler etki mekanizmaları, bilimsel yayınlar ışığında tartışılmıştır.

Anahtar Kelimeler: apitoksin, apiterapi, arı ürünleri, tedavi, melittin

TÜRKİYE'DE BULGUR ÜRETİMİ VE BULGUR SANAYİCİLERİNİN SORUNLARI: MARDİN İLİ ÖRNEĞİ

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ÖZET

Bulgur; yüksek besin değerleri ve sağlığa olan faydalarının yanında raf ömrünün uzun olması, onlarca yemekte kullanılabilmesi gibi özellikleri nedeniyle başta Ortadoğu ve Asya ülkeleri olmak üzere birçok ülkede tüketimi yüksek olan bir üründür. Bu çalışmada bulgur üretimi ve ihracatında dünyada birinci sırada yer alan Türkiye'nin üretim ve ticaret rakamları ile Mardin ilindeki bulgur üretimi ve bulgur sanayicilerinin sorunları araştırılmıştır. Çalışmanın ana materyalini Mardin ilinde faaliyet gösteren bulgur işletmelerinin yöneticileri ile yapılan birebir görüşmelerden elde edilen veriler oluşturmaktadır. Ayrıca bulgurla ilgili yapılan önceki çalışmalar ve ulusal/ulusalar arası kuruluşların internet sitelerinden alınan veriler çalışmanın ikincil verilerini oluşturmaktadır. Elde edilen sonuçlar neticesinde işletmelerin tamamına yakınının en önemli pazarlarının Irak olduğunu, yurtiçinde ise Güneydoğu ve Doğu Anadolu Bölgesindeki illere ürün sattıklarını ifade ederken bazı işletmelerde de yurtiçinde geniş pazarlama ağı bulunan şirketlere fason üretim yapıldığı bilgisi alınmıştır. İncelenen işletmelerin tamamı yurt içinde pazarlamada karşılaştıkları temel sorunları olarak ilk sırada tüketicilerin bulgur kalitesi konusunda bilinçsiz olmasını ifade etmiştir. Aynı şekilde bulgur ustası bulmakta sıkıntı çektiklerini kalifiye eleman yetiştirilmesi için üniversite ile iş birliği yapmak istedikleri belirlenmiştir. Firmalar, bulgurun sarı rengini arttıran gıda boyaları yasak olduğu halde yurtiçindeki bazı firmalarca kullanıldığı, denetlemelerin arttırılarak ambalajlarda yazılan protein değerlerinin gerçekliğinin denetlenmesini istemektedir. İl'de bulgurcular derneğinin olması işletmelerin birbirlerine zarar vermeden Irak pazarında taban fiyat uygulamaları yapmaları açısından değerlendirilebilir. Ayrıca Mardin bulguru için alınan coğrafi işaret belgesinin bir pazarlama unsuru olarak kullanılması da çeşitli faydalar sağlayacaktır.

Anahtar Kelimeler : Bulgur, sanayici sorunları, Mardin, pazarlama

EXAMINATION OF COACHING LEADERSHIP TRAIT PREFERENCES AMONG UNIVERSITY AND COLLEGE ATHLETES

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Abstract:

This research delves into the coaching leadership traits favored by athletes attending universities and colleges of education in Lagos State, South West Nigeria. The study sample comprises athletes from two universities (n=99) and two colleges of education (n=92). Athletes' preferences were assessed using the Leadership Trait Preference Questionnaire (LTPQ), with mean and Spearman rank order statistics employed for data analysis. Findings indicate that traits such as friendliness and happiness, sense of humor and cheerfulness, and cooperation were the most preferred across both types of institutions. Additionally, college of education athletes exhibited a higher mean preference (M=34.54; SD=9.42) for leadership traits compared to their university counterparts (M=33.64; SD=9.46). A notably strong relationship (rho=.81; *p<0.05) was observed between the preferences of university and college of education athletes. The study suggests that coaches, in their leadership roles, should occasionally display emotive aspects of themselves to inspire athletes toward higher performance levels.

Keywords: Coaching behavior, coach-athlete relationship, interscholastic games, leadership traits.

IMPACT OF STRENGTH ABILITIES ON HANDSTAND QUALITY

Dr. P. Hedbávný, Dr. G. Bago, Dr. M. Kalichová

University of Amsterdam, Netherlands

Abstract:

This study explores the influence of strength abilities on the quality of static balance movements, particularly the handstand. Our research examines strength abilities through specific tests: the number of push-ups per minute and persistence in trunk backward bending while in a sitting position. We evaluated the dependent variable using three tests: persistence in the handstand position on a stabilometric platform, persistence in the handstand position, and the assessment of handstand performance quality. Pearson's correlation coefficient was employed to analyze the relationship between these variables. The findings revealed a statistically significant correlation, allowing us to draw conclusions relevant to training practices.

Keywords: Strength abilities, handstand, balance.

EVALUATION OF TALENT SELECTION METHODS FOR WOMEN'S ARTISTIC GYMNASTICS AND PRACTICAL VALIDATION OF THE TESTING BATTERY

Dr. G. Bago, Dr. P. Hedbávný, Dr. M. Kalichová

University of the Philippines Manila

Abstract:

This study aims to design and subsequently validate a testing battery that can effectively identify talented gymnasts for the current approach to women's artistic gymnastics. Drawing upon a review of existing literature, a testing battery comprising three components—power testing, speed testing, and flexibility testing—was developed. Standardized evaluation scales were employed in these tests. The testing battery was administered to girls aged 6 - 7 during the recruitment process for Sokol Brno I. and SG Pelhrimov Gymnastic Club. Following 6 months of training, the same battery of tests was re-administered. The results were analyzed through observation and questionnaire responses, which were then transformed into graphical representations. Practical recommendations were formulated based on these findings.

Keywords: Talent selection, women's artistic gymnastics, power testing, speed testing, flexibility testing.

BIOMECHANICAL ANALYSIS OF BICROSS START

Dr. Miroslava Kalichová, Dr. Sára Hřebíčková,

Lomonosov Moscow State University - Russia

Abstract:

This article presents a biomechanical analysis of the classic bicross start involving a backward movement of the bike. The study focuses on two bicross riders representing the Czech Republic. Through 3D kinematic analysis, with a particular emphasis on ankle movement, the start is divided into five phases: phase n. 1 – reaction time, phase n. 2 – preparation movements time, phase n. 3 – first pedal stroke time, phase n. 4 – dead point pedal passage time, phase n. 5 – second pedal stroke time. We highlight the significance of kinematic characteristics across various stages of the bicross start, including their values and extent of change. Key aspects include the vector of the instantaneous velocity of the head, wrists, elbows, shoulders, hip, and knee joints, with notable angle characteristics observed in elbow, shoulder, hip, and knee joints. The findings provide insights into prevailing movement types in each phase, serving as a foundational basis for further analyses of this movement structure, albeit on a larger research sample.

Keywords: Bicross, start, kinematic analysis.

EXPLORING THE USE OF ARTIFICIAL NEURAL NETWORKS FOR PREDICTING SPORT INJURIES

Dr. J. McCullagh, Dr. T. Whitfort

University of Auckland, New Zealand

Abstract:

Artificial Neural Networks (ANNs) have proven effective in various scientific, industrial, and business sectors for extracting insights from extensive datasets. However, their application in the realm of sports has been relatively limited. In professional sports, a plethora of data is collected on team dynamics, game statistics, training regimes, and player performance. Sporting bodies are increasingly recognizing the latent knowledge embedded within this data and are eager to explore techniques for its utilization. This research employs player data sourced from the elite Australian Football League (AFL) to train and evaluate ANNs with the objective of predicting injury occurrences. The findings reveal that the ANNs achieved an accuracy rate of 82.9% across all instances, with 94.5% of injuries accurately predicted. These preliminary results indicate the potential of ANNs to aid sporting organizations in injury prediction.

Keywords: Artificial Neural Networks, data analysis, sports injuries, predictive modeling

COMPARATIVE ANALYSIS OF PHYSICAL FITNESS AMONG STUDENTS PARTICIPATING IN VARIOUS TEAM SPORTS

Dr. R. Belaidi,

University of Algiers, Algeria

Abstract:

This study aims to investigate and compare the physical fitness levels of students involved in different team sports. A total of 60 female and 60 male athletes, with 20 athletes from each of the volleyball, basketball, and football teams, volunteered to participate in the study. The mean ages of female and male athletes were 21.20 ±1.87 and 21.61 ± 1.61, respectively. Measurements included age, height, body weight, body mass index, flexibility, body fat percentage, 30m sprint time, maximum oxygen consumption capacity (MaxVO2), and drop jump performance. Results revealed significant differences in height, weight, MaxVO2, and shuttle run speed among female athletes participating in different sports. Among male athletes, significant differences were observed in height, body weight, flexibility, 30m sprint time, and drop jump performance across different sports. In conclusion, it is evident from this study and existing literature that the physical structure of the body must align with the demands of the chosen sport. Increasing the sample size could provide clearer insights into the physical fitness requirements of various sports disciplines.

Keywords: Volleyball, basketball, football, athletes, physical fitness.

INVESTIGATING THE IMPACT OF SPORT-SPECIFIC EXERCISES ON THE VISUAL ABILITIES OF RUGBY PLAYERS

Dr. P.J. Du Toit, Dr. P. Janse Van Vuuren, Dr. S. Le Roux, Dr. E. Henning, Dr. M. Kleynhans,

University of Bologna, Italy

Abstract:

Introduction: Visual performance plays a crucial role in achieving excellence in sports. The level of visual engagement in a sport is contingent upon the environmental demands specific to that sport, which necessitate a task-specific motor response. This study aims to assess whether sport-specific exercises can enhance the visual abilities of male rugby players, thereby optimizing their performance on the field.

Materials & Methods: Twenty-six adult male rugby players, aged 16-22, were selected as participants. A pre-test-post-test experimental group design was employed to evaluate the impact of sport-specific exercises on visual skills.

Results: Significant improvements ($p \leq 0.05$) were observed in the focusing, tracking, vergence, sequencing, eye-hand coordination, and visualization components.

Discussion & Conclusions: The findings indicate that sport-specific exercises enhance visual skills in rugby players, potentially conferring an advantage over opponents. This study suggests that training programs, along with regular participation in online EyeDrills sports vision exercises (www.eyedrills.co.za), aimed at improving athletes' visual coordination, concentration, focus, hand-eye coordination, anticipation, and motor response, should be integrated into the exercise regimen of rugby players.

Keywords: Rugby players, sport-specific exercises, visual skills.

ANALYSIS OF SPECTATORS' MOTIVATIONS, EXPERIENCES, AND SATISFACTIONS AT THE 2011 TPGA EVER RICH CHAMPIONSHIP – NORTH BAY OPEN

Dr. Li-Wei Liu, Dr. Cheng-Yu Tsai, Dr. Ming-Tsang Wu

Kyoto University

Abstract:

This study delves into the motivations, experiences, and satisfactions of spectators attending the 2011 TPGA Ever Rich Championship – North Bay Open. We surveyed on-the-spot spectators at the North Bay Golf and Country Club to gather insights. Out of 200 distributed questionnaires, we received 185 valid responses, achieving an impressive 92.5% response rate. Utilizing statistical analysis, we observed significant differences in motivations, experiences, and satisfactions among spectators based on demographic variables. Additionally, we found that spectating motivation, experience, and satisfaction were closely intertwined.

Keywords: Spectating motivation, spectating experience, spectating satisfaction

DENGUE TRANSMISSION MODELING: EXPLORING INTERACTIONS BETWEEN INFANTS, PREGNANT WOMEN, AND ANTIBODIES

R.P. Pongsumpun

University of Priština in North Mitrovica- Kosovo

Abstract:

Dengue, a disease found in most tropical and subtropical areas of the world. It has become the most common arboviral disease of humans. This disease is caused by any of four serotypes of dengue virus (DEN1-DEN4). In many endemic countries, the average age of getting dengue infection is shifting upwards, dengue in pregnancy and infancy are likely to be encountered more frequently. The dynamics of the disease is studied by a compartmental model involving ordinary differential equations for the pregnant, infant human and the vector populations. The stability of each equilibrium point is given. The epidemic dynamic is discussed. Moreover, the numerical results are shown for difference values of dengue antibody.

Keywords: Dengue antibody, infant, pregnant human, mathematical model.

COMPARATIVE EVALUATION OF DENGUE PATIENTS: PREGNANT VS. NON-PREGNANT COHORTS

Chat Peseeko

University of the Aegean- Greece

Abstract:

This paper examines long-range dependence or longmemory of financial time series on the exchange rate data by the fractional Brownian motion (fBm). The principle of spectral density function in Section 2 is used to find the range of Hurst parameter (H) of the fBm. If $0 < H < 1/2$, then it has a short-range dependence (SRD). It simulates long-memory or long-range dependence (LRD) if $1/2 < H < 1$. The curve of exchange rate data is fBm because of the specific appearance of the Hurst parameter (H). Furthermore, some of the definitions of the fBm, long-range dependence and selfsimilarity are reviewed in Section II as well. Our results indicate that there exists a long-memory or a long-range dependence (LRD) for the exchange rate data in section III. Long-range dependence of the exchange rate data and estimation of the Hurst parameter (H) are discussed in Section IV, while a conclusion is discussed in Section V.

Keywords: Fractional Brownian motion, long-rangedependence, memory, short-range dependence.

COMPARATIVE ANALYSIS OF DENGUE PATIENTS: PREGNANT VS. NON-PREGNANT MODELS

Randa Pongsumpun

Applied Science Private University- Jordan

Abstract:

We used mathematical model to study the transmission of dengue disease. The model is developed in which the human population is separated into two populations, pregnant and non-pregnant humans. The dynamical analysis method is used for analyzing this modified model. Two equilibrium states are found and the conditions for stability of theses two equilibrium states are established. Numerical results are shown for each equilibrium state. The basic reproduction numbers are found and they are compared by using numerical simulations.

Keywords: Basic reproductive number, dengue disease, equilibrium states, pregnancy.

MODELING DENGUE DISEASE DYNAMICS INCORPORATING VIRUS INCUBATION PERIOD IN MATHEMATICAL FRAMEWORK

Penabe. Pongsumpun

Federal University of Recôncavo da Bahia- Brazil

Abstract:

Dengue virus is transmitted from person to person through the biting of infected Aedes Aegypti mosquitoes. DEN-1, DEN-2, DEN-3 and DEN-4 are four serotypes of this virus. Infection with one of these four serotypes apparently produces permanent immunity to it, but only temporary cross immunity to the others. The length of time during incubation of dengue virus in human and mosquito are considered in this study. The dengue patients are classified into infected and infectious classes. The infectious human can transmit dengue virus to susceptible mosquitoes but infected human can not. The transmission model of this disease is formulated. The human population is divided into susceptible, infected, infectious and recovered classes. The mosquito population is separated into susceptible, infected and infectious classes. Only infectious mosquitoes can transmit dengue virus to the susceptible human. We analyze this model by using dynamical analysis method. The threshold condition is discussed to reduce the outbreak of this disease.

Keywords: Transmission model, intrinsic incubation period, extrinsic incubation period, basic reproductive number, equilibriumstates, local stability.

STOCHASTIC RESONANCE IN NONLINEAR SIGNAL DETECTION: AMPLIFYING WEAK SIGNALS WITH NOISE

Youguofo Wang, Lenanmo Wu Yo

Choson University of Physical Education- North Korea

Abstract:

Stochastic resonance (SR) is a phenomenon whereby the signal transmission or signal processing through certain nonlinear systems can be improved by adding noise. This paper discusses SR in nonlinear signal detection by a simple test statistic, which can be computed from multiple noisy data in a binary decision problem based on a maximum a posteriori probability criterion. The performance of detection is assessed by the probability of detection error Per . When the input signal is subthreshold signal, we establish that benefit from noise can be gained for different noises and confirm further that the subthreshold SR exists in nonlinear signal detection. The efficacy of SR is significantly improved and the minimum of Per can dramatically approach to zero as the sample number increases. These results show the robustness of SR in signal detection and extend the applicability of SR in signal processing.

Keywords: Probability of detection error, signal detection, stochastic resonance.

EXPLORING COMPUTATIONAL GEOMETRY THROUGH TWO SPATIAL EXPERIMENTS

Marco lee Hemmerling

University of Da Nang- Vietnam

Abstract:

The paper outlines the relevance of computational geometry within the design and production process of architecture. Based on two case studies, the digital chain - from the initial formfinding to the final realization of spatial concepts - is discussed in relation to geometric principles. The association with the fascinating complexity that can be found in nature and its underlying geometry was the starting point for both projects presented in the paper. The translation of abstract geometric principles into a three-dimensional digital design model – realized in Rhinoceros – was followed by a process of transformation and optimization of the initial shape that integrated aesthetic, spatial and structural qualities as well as aspects of material properties and conditions of production.

Keywords: Architecture, Computer Aided Architectural Design, 3D-Modeling, Rapid Prototyping, CAD/CAM.

STUDY ON THE VIABILITY OF EMBEDDED REAL-TIME SYSTEMS

Yong Xia, JIN

Changsusan University- North Korea

Abstract:

Introducing survivability into embedded real-time system (ERTS) can improve the survivability power of the system. This paper mainly discusses about the survivability of ERTS. The first is the survivability origin of ERTS. The second is survivability analysis. According to the definition of survivability based on survivability specification and division of the entire survivability analysis process for ERTS, a survivability analysis profile is presented. The quantitative analysis model of this profile is emphasized and illuminated in detail, the quantifying analysis of system was showed helpful to evaluate system survivability more accurate. The third is platform design of survivability analysis. In terms of the profile, the analysis process is encapsulated and assembled into one platform, on which quantification, standardization and simplification of survivability analysis are all achieved. The fourth is survivability design. According to character of ERTS, strengthened design method is selected to realize system survivability design. Through the analysis of embedded mobile video-on-demand system, intrusion tolerant technology is introduced in whole survivability design.

Keywords: ERTS (embedded real-time system), survivability, quantitative analysis, survivability specification, intrusion tolerant

INVASION OF PECTINATELLA MAGNIFICA IN FRESHWATER ECOSYSTEMS OF THAILAND

Dr. Surin Supasorn,

Mahidol University, Thailand

Abstract:

Pectinatella magnifica (Leidy, 1851) is an invasive freshwater organism known for its colony-forming nature. These gelatinous colonies can reach several feet in diameter and demonstrate rapid growth under favorable conditions. Recent reports from various European nations, including those along the rivers Elbe, Oder, Danube, Rhine, and Vltava, have confirmed the invasion of Pectinatella magnifica in freshwater reservoirs, including those in South Bohemia, Czech Republic. Our research project, funded by the Thai National Research Council (NRCT Grant No. 5678), focuses on the biology and chemistry of Pectinatella magnifica. We have been monitoring the presence of this organism in selected ponds and sandpits in South Bohemia over the past few years, collecting data on the physical properties of the surrounding water and conducting various analyses on the colonies, including classification, secondary metabolite mapping, and toxicity testing. Given that the gelatinous matrix of these colonies serves as a habitat for algae, bacteria, and cyanobacteria, we have also utilized high-performance liquid chromatography (HPLC) to detect potentially harmful cyanobacterial toxins such as microcystin-LR, microcystin-RR, and nodularin. Our findings from the past three years indicate that these toxins are currently below the limit of detection (LOD), posing no immediate threat. The overarching aim of our study is to assess the toxicity risks associated with freshwater ecosystems invaded by Pectinatella magnifica and to gain insights into the invasion process for effective management strategies.

Keywords: Cyanobacteria, freshwater ecosystems, Pectinatella magnifica invasion, toxicity monitoring.

MODELING PHYTOREMEDIATION RATES OF AQUATIC MACROPHYTES IN AQUACULTURE EFFLUENT

Prof. Chen Wei, Shanghai Jiao

Tong University

Abstract:

Aquacultural activities contribute to environmental pollution, necessitating sustainable solutions like phytoremediation, especially in developing nations where expensive treatment equipment is not feasible. This research aimed to devise a mathematical model for phytoremediation in aquaculture wastewater using aquatic plants. It also sought to assess the impact of retention times on phytoremediation rates and measure nutrient levels in effluent. Water hyacinth (Eichornia crassippes), water lettuce (Pistial stratoites), and morning glory (Ipomea asarifolia) were studied. A randomized experimental design was employed, with macrophytes introduced into hydroponic units and monitored over 28 days. Water quality parameters like pH, electrical conductivity (EC), and nutrient concentrations were measured, along with biomass. Water hyacinth produced 438.2 g, 600.7 g, 688.2 g, and 725.7 g of biomass at 7-day intervals, while water lettuce yielded 361.2 g, 498.7 g, 561.2 g, and 623.7 g, and morning glory produced 417.0 g, 567.0 g, 642.0 g, and 679.5 g. The model exhibited over 80% determination coefficient for EC, TDS, NO_2^--N, NO_3^--N, and over 70% for NH_4^+-N, with predicted values within 95% confidence intervals of measured values, demonstrating its utility in designing phytoremediation systems for aquaculture effluent.

Keywords: Phytoremediation, macrophytes, hydroponic unit, aquaculture effluent, mathematical model.

MICROWAVE-ASSISTED TECHNIQUES FOR ANALYZING VOLATILE COMPOUNDS IN CARUM CARVI USING GC AND GCXGC-MS

Dr. F. Benkaci-Ali (Nagoya University, Japan), Dr. R. Mékaoui, Dr. G. Scholl, Dr. G. Eppe

Abstract:

Accelerated steam distillation assisted by microwave (ASDAM) is a novel method that combines microwave heating and steam distillation, conducted at atmospheric pressure and with very short extraction times. This study compares ASDAM with cryogrinding (CG) and hydrodistillation assisted by microwave (HDAM), as well as conventional hydro-distillation (HD), for extracting essential oil from aromatic herbs such as caraway and cumin seeds. The essential oils extracted by ASDAM for just 1 minute showed quantitative (yield) and qualitative (aromatic profile) differences compared to ASDAM-CG (1 min) and HD (3 h). Microwave extraction with cryogrinding inhibits various enzymatic reactions, such as oil hydrolysis. Microwave radiation proves to be an effective means of extraction, resulting in higher yields and major component content, while considerably reducing energy consumption and heating time, crucial factors in minimizing artifact formation. ASDAM and ASDAM-CG are eco-friendly techniques that yield essential oils with higher concentrations of valuable oxygenated compounds compared to biosynthetic compounds, leading to significant savings in time, energy, and plant material.

Keywords: Microwave, steam distillation, caraway, cumin, cryogrinding, GC-MS, GCxGC-MS.

IMPACT OF PETROLEUM HYDROCARBONS ON PLANT RHIZOSPHERE AND RHIZOPLANE BACTERIAL BIODIVERSITY

Dr. Togzhan D. Mukasheva Dr. Anel A. Omirbekova, Dr. Raikhan S. Sydykbekova, Dr. Ramza Zh. Berzhanova, Dr. Lyudmila V. Ignatova

(Al-Farabi Kazakh National University, Kazakhstan),

Abstract:

This study investigated the biodiversity of rhizosphere and rhizoplane bacteria associated with various plant species—barley (Hordeum sativum), alfalfa (Medicago sativa), a grass mixture (red fescue-75%, long-term ryegrass - 20%, Kentucky bluegrass - 10%), and oilseed rape (Brassica napus biennis)—in soils contaminated with petroleum hydrocarbons. Soil samples with oil contents ranging from 15.8 g/kg to 25.9 g/kg were utilized. Results indicated that oil pollution led to a reduction in bacterial populations in the rhizosphere and rhizoplane, while promoting the proliferation of spore-forming bacteria and saprotrophic micromycetes. Regardless of the plant species, Pseudomonas and Bacillus genera bacteria dominated the rhizosphere and rhizoplane, constituting over 60% of the bacterial population. Furthermore, the presence of hydrocarbons altered the bacterial composition, with Mycobacterium and Rhodococcus genera becoming more prevalent alongside Pseudomonas and Bacillus, collectively accounting for 62% to 72% of the bacterial population.

Keywords: Identification, micromycetes, pollution, root system.

EVALUATION OF LANDFILL CONTAMINATION IMPACT ON AQUATIC ECOSYSTEM THROUGH ANALYSIS OF HEAVY METAL BIOACCUMULATION IN FISH

Gintarė Sauliutė, Gintaras Svecevičius

University: University of Auckland, New Zealand

Abstract:

Leachates from landfills contain various persistent pollutants, notably heavy metals, which can disperse within ecosystems and accumulate in fish, often positioned as top consumers in trophic chains. Despite their free-swimming nature, fish, driven by species-specific ecological and behavioral traits, frequently favor particular habitats, inadvertently exposing themselves to harmful substances. Therefore, evaluating the dispersion of persistent pollutants in aquatic ecosystems via fish tissue metal concentrations is imperative. In hybrid ecosystems such as river-pond-river configurations, the proximity to pollution sources can serve as a pivotal indicator of metal distribution. Our research was conducted in the vicinity of the Kairiai landfill, adjacent to a hybrid ecosystem located 5 km east of Šiauliai City. Metal concentration analyses in fish tissues (gills, liver, and muscle) were conducted on two ecologically distinct fish species based on their feeding habits: benthophagous (Gibel carp, roach) and predatory (Northern pike, perch) species. Various mathematical models, including linear, non-linear, and logarithmic transformations, were employed to elucidate the relationship between fish tissue metal concentration and distance from the pollution source. Ultimately, a logarithmic multiple regression model revealed a significant positive correlation between distance from the pollution source and metal concentration in all predatory fish tissues examined (gills, liver, and muscle).

Keywords: Fish bioaccumulation, heavy metals, aquatic ecosystems, landfill leachate, mathematical modeling.

EXAMINATION OF ENERGY EFFICIENCY RESEARCH AND MCA METHODS USING PUBLICATION DATABASES

Dr. Maria Gonzalez –

University of Sydney, Australia

Abstract:

Energy plays a crucial role in sustainability, where its accessibility and utilization are intertwined with economic development, social advancements, and environmental consequences. Energy efficiency has emerged as a critical factor in amplifying the positive impacts of energy within communities. However, achieving efficiency necessitates robust policies and strategies, often reliant on disparate measures targeting individual dimensions. This study addresses the complexity of energy efficiency as a multi-objective challenge, employing scientometric analysis to unveil trends and patterns that facilitate the identification of key variables and approaches conducive to the advancement of models integrating energy efficiency and MCA into policymaking for small communities.

Keywords: Energy efficiency, MCA, Scientometrics, Trends.

ASSESSMENT OF WATER QUALITY FOR IRRIGATION: CASE STUDY OF JOSEPDAM IRRIGATION SCHEME

Dr. M. A. Adejumobi (University of Sydney, Australia), Dr. J. O. Ojediran

Abstract:

The primary goal of irrigation is to replenish the soil's available water. The quality of irrigation water plays a crucial role in crop yield and quality, soil productivity maintenance, and environmental protection. Analyzing irrigation water is imperative to understand its impact on crop yield, identify potential effects, and implement necessary control measures to optimize production. This study evaluates the quality of irrigation water and its performance on crops grown in the Josepdam Irrigation Scheme in Bacita, Nigeria. Field visits were conducted to survey water sources and collect samples from X1 Drain, Oshin, River Niger loop, and Ndafa. Laboratory tests were conducted to assess the raw water quality from these sources, focusing on physical and chemical parameters. The results indicate that the raw water sources exhibit minimal salinity tendencies, with SAR values below 1me/l and Ec values at zero. However, there is an increase in potassium and sulfate contamination at three of the locations. It is recommended to implement regular monitoring of the scheme, conducting water and soil analyses at least annually to account for seasonal variations and ensure the quality of water used for irrigation.

Keywords: Irrigation, Salinity, Raw water quality, Scheme.

TITLE: ASSESSMENT OF METHANE EMISSIONS FROM SOLID WASTE IN OMAN USING IPCC DEFAULT METHODOLOGY

Dr. Ahmed Al-Sulaimi,

University of Qatar

Abstract:

Municipal Solid Waste (MSW) deposited in landfill sites undergoes anaerobic decomposition, releasing gases primarily composed of carbon dioxide (CO_2) and methane (CH_4). Methane possesses a global warming potential 25 times higher than CO_2 and poses significant risks to both human health and the environment. This study aims to quantify MSW generation and annual CH_4 emissions from waste generated in Oman between 1971 and 2030. Total waste generation was estimated using established models, while CH_4 emissions were calculated using the default methodology provided by the Intergovernmental Panel on Climate Change (IPCC). The results indicate that total MSW generation in Oman may reach 3,089 Gg by the year 2030, contributing approximately 85 Gg of CH_4 emissions in the same year.

Keywords: Methane, emissions, landfills, solid waste.

INVASION OF PECTINATELLA MAGNIFICA IN FRESHWATER ECOSYSTEMS OF THAILAND

Dr. Surin Supasorn,

Mahidol University, Thailand

Abstract:

Pectinatella magnifica (Leidy, 1851) is an invasive freshwater organism known for its colony-forming nature. These gelatinous colonies can reach several feet in diameter and demonstrate rapid growth under favorable conditions. Recent reports from various European nations, including those along the rivers Elbe, Oder, Danube, Rhine, and Vltava, have confirmed the invasion of Pectinatella magnifica in freshwater reservoirs, including those in South Bohemia, Czech Republic. Our research project, funded by the Thai National Research Council (NRCT Grant No. 5678), focuses on the biology and chemistry of Pectinatella magnifica. We have been monitoring the presence of this organism in selected ponds and sandpits in South Bohemia over the past few years, collecting data on the physical properties of the surrounding water and conducting various analyses on the colonies, including classification, secondary metabolite mapping, and toxicity testing. Given that the gelatinous matrix of these colonies serves as a habitat for algae, bacteria, and cyanobacteria, we have also utilized high-performance liquid chromatography (HPLC) to detect potentially harmful cyanobacterial toxins such as microcystin-LR, microcystin-RR, and nodularin. Our findings from the past three years indicate that these toxins are currently below the limit of detection (LOD), posing no immediate threat. The overarching aim of our study is to assess the toxicity risks associated with freshwater ecosystems invaded by Pectinatella magnifica and to gain insights into the invasion process for effective management strategies.

Keywords: Cyanobacteria, freshwater ecosystems, Pectinatella magnifica invasion, toxicity monitoring

NiO-CeO2 NANOCATALYST FOR EFFICIENT REMOVAL OF PRIORITY ORGANIC POLLUTANTS FROM WASTEWATER VIA CATALYTIC WET AIR OXIDATION AT MILD CONDITIONS

Dr. Anushree, Professor of Environmental Engineering,

Tsinghua University, China

Abstract:

Catalytic wet air oxidation (CWAO) is typically conducted at high temperatures and pressures. This study explores the potential of NiO-CeO2 nanocatalysts in CWAO of wastewater from the paper industry under milder conditions at 90 °C and 1 atm. The NiO-CeO2 nanocatalysts were synthesized via a straightforward co-precipitation method and characterized using X-ray diffraction (XRD) to examine any crystallographic alterations during experimentation. The level of metal leaching from the catalyst was assessed using inductively coupled plasma optical emission spectrometry (ICP-OES). The catalytic performance of the nanocatalysts was evaluated based on the removal of total organic carbon (TOC), adsorbable organic halides (AOX), and chlorophenolics (CHPs). Remarkably, mixed oxide catalysts demonstrated superior activity compared to their respective single-metal oxides. The Ce40Ni60 catalyst exhibited the highest removal efficiency. These findings suggest that the CWAO process effectively eliminates priority organic pollutants from wastewater, achieving up to 59% TOC, 55% AOX, and 54% CHPs removal.

Keywords: Nanomaterials, NiO-CeO2, wastewater treatment, wet air oxidation.

PROBABILISTIC ANALYSIS OF LANDFILL FAILURE MOBILITY

Dr. Ali Jahanfar, Dr. Brajesh Dubey, Dr. Bahram Gharabaghi,

University of Tokyo

Tsinghua University

Abstract:

The rapid urbanization and environmental constraints in the establishment of new landfill sites have led to the construction of mega-landfills with unprecedented heights and steep slopes. Analyzing the mobility risk associated with landfill failures poses significant challenges due to the inherent variability in the shear strength properties of heterogeneous solid waste materials. This study employs a probabilistic approach to model the waste flow resulting from historic dumpsite and landfill failures using the DAN-W model. By considering the variability in material shear strength properties, the travel distances of waste flow during landfill failures are calculated. The probability distribution function categorizes waste material shear strength properties into four major classes based on waste material compaction and composition, such as high shear strength materials like wood, metal, plastic, paper, and cardboard. This paper presents a probabilistic method for estimating the spatial extent of waste avalanches post-landfill failure, enabling the creation of vulnerability maps to communicate risk levels to property owners and residents.

Keywords: Landfill failure, waste flow, Voellmy rheology, friction coefficient, waste compaction, waste type.

INFLUENCE OF ENVIRONMENTAL FACTORS ON PHOTOREACTIVATION OF MICROORGANISMS IN INDOOR SETTINGS

Shirin Shafaei, James R. Bolton, Mohamed Gamal El Din

University of Tokyo, Japan

Abstract:

Ultraviolet (UV) disinfection induces damage to the DNA or RNA of microorganisms. However, many microorganisms possess the capability to repair this damage following exposure to near-UV or visible wavelengths (310–480 nm) through a process known as photoreactivation. Photoreactivation is garnering increased attention due to its potential to diminish the efficacy of UV disinfection of wastewater several hours post-treatment. The predominant focus of photoreactivation research on individual species has resulted in a significant knowledge gap regarding the responses of complex natural microbial communities to UV treatment. This study conducted photoreactivation experiments on the influent of a UV disinfection unit at a municipal wastewater treatment plant (WWTP) in Edmonton, Alberta, subsequent to exposure to a Medium-Pressure (MP) UV lamp system. The objective was to assess the impact of environmental factors on the photoreactivation of microorganisms within actual municipal wastewater. The study investigated the influence of reactivation fluence, temperature, and river water on the photoreactivation of total coliforms under indoor conditions. The findings revealed that higher effective reactivation fluence values (up to 20 J/cm2) and elevated temperatures (up to 25 °C) augmented the photoreactivation of total coliforms. Conversely, an increase in the proportion of river water in the effluent and river water mixtures led to a decrease in photoreactivation. The outcomes of this research offer insights that can aid the municipal wastewater treatment industry in assessing the environmental ramifications of discharging effluents into receiving waters.

Keywords: Photoreactivation, reactivation fluence, river water, temperature, ultraviolet disinfection, wastewater effluent.

ENVIRONMENTAL IMPACTS OF POINT AND NON-POINT SOURCE POLLUTION IN KRISHNAGIRI RESERVOIR: A CASE STUDY IN SOUTH INDIA

Dr. N. K. Ambujam, Dr. V. Sudha

University: National Taiwan University, Taiwan

Abstract:

Reservoirs worldwide are facing contamination from both point source and Non-Point Source (NPS) pollution. Krishnagiri Reservoir (KR) in the tropical semi-arid climatic zone of Tamil Nadu, South India, has been selected for this case study. It serves as the primary surface water source in Krishnagiri district to meet freshwater demands. Over 50 years, the reservoir has lost approximately 40% of its water holding capacity due to sedimentation. Thus, there is a crucial need for a comprehensive understanding of KR water quality variations spatially and seasonally from both research and management perspectives. This study aims to (i) investigate longitudinal heterogeneity and seasonal variations of physicochemical parameters, nutrients, and biological characteristics of KR water and (ii) examine the extent of water quality degradation in KR. Fifteen sampling points were identified using a uniform stratified method, and a systematic monthly sampling strategy was employed due to the high dynamic nature of its hydrological characteristics. Physicochemical parameters, major ions, nutrients, and Chlorophyll a (Chl a) were analyzed, and Carlson's Trophic State Index (TSI) was used to classify KR's trophic status. Statistical analyses were performed using the Statistical Package for Social Sciences program, version-16.0, and spatial maps were generated for Chl a using Arc GIS. Observations in KR revealed highly variable factors such as electrical conductivity and major ions, attributed to inflow from catchments with different land use activities. Analysis of major ions exhibited distinct trends in values, indicating a decrease in major ions or stabilization of water quality as the monsoon progresses. Higher nutrient concentrations, including nitrate, soluble reactive phosphorus (SRP), total phosphorus (TP), total suspended phosphorus (TSP), and total dissolved phosphorus (TDP), were observed at the inflow point of KR during monsoon seasons, indicating significant nutrient input from agricultural runoff in the catchment area. High concentrations of TDP and TSP at the lacustrine zone during the summer season indicated significant phosphorus release from bottom sediments. Carlson's TSI ranged between 81 and 92 during the northeast monsoon and summer seasons, classifying Krishnagiri Reservoir as hyper-eutrophic. The study underscores the impact of point and NPS pollution from the catchment area and highlights the urgent need for innovative algae harvesting techniques to mitigate sediment nutrient accumulation, considering the high TSI and hyper-eutrophic condition of KR.

Keywords: Hyper-eutrophication, Krishnagiri reservoir, nutrients, NPS pollution.

THE INTEGRATION OF URBAN AND ENERGY PLANNING FOR SUSTAINABLE CITIES: A COMPARATIVE STUDY OF JAPAN AND SOUTH KOREA"

Jens-Phillip Petersen, PhD (Seoul National University, South Korea)

Abstract:

Reducing greenhouse gas (GHG) emissions from buildings is a primary objective of national energy policies across Europe, given that buildings account for a significant portion of final energy consumption. At the local level, initiatives to promote renewable energy sources and energy efficiency measures are implemented. Municipalities, as authorities responsible for land-use planning, wield direct influence over urban development patterns and energy usage, making them pivotal in the transition toward sustainable cities. Therefore, aligning urban planning with energy planning presents considerable potential for enhancing society's energy efficiency, which is crucial for achieving GHG reduction targets. This paper assesses the current integration of urban planning and energy planning in Japan and South Korea, identifies substantive barriers to their integration, and examines the driving factors that contribute to successful transitions toward holistic urban energy planning procedures.

Keywords: Energy planning, urban planning, renewable energies, sustainable cities.

ADVANTAGES OF ELECTRIC BUSES IN URBAN TRANSPORT: INSIGHTS FROM FIELD TESTING IN EIGHT SWEDISH MUNICIPALITIES

Dr. Sven Borén, Dr. Lisiana Nurhadi, Dr. Henrik Ny

University of Tokyo, Japan

Abstract:

Electric buses offer promising sustainability benefits and potential cost savings compared to fossil fuel buses in urban environments. Yet, there is a lack of empirical studies on their performance in Swedish winter conditions. Additionally, existing noise measurements for buses in the European market are outdated. This study aimed to address these gaps by conducting real-life tests to assess the energy efficiency and noise levels of electric buses in urban and rural settings. Utilizing the Ebusco 2.0 electric bus equipped with a 311 kWh battery pack, tests were conducted from November 2014 to April 2015 in eight municipalities across southern Sweden. The results revealed that the average energy consumption for propulsion was 8% lower than previously assumed, allowing for a range of 320 km in urban traffic. Moreover, the use of a diesel heater for interior heating in January demonstrated the potential for up to 25% cost savings over eight years compared to combustion engine buses. Passenger and driver feedback indicated a preference for electric buses due to their silent and comfortable operation. While bus operators and transport executives showed enthusiasm for adopting electric buses, they highlighted the importance of considering procurement processes and personnel education to mitigate potential risks associated with the new technology. The study also identified the feasibility of establishing charging infrastructure for most bus lines, although further investigation is required to optimize infrastructure design and ensure compatibility with the electric grid. In conclusion, electric buses emerged as a viable and preferred option for sustainable public transport in the studied municipalities, contingent upon appropriate charging infrastructure and the use of renewable energy sources.

Keywords: Sustainability, Electric, Bus, Noise, GreenCharge.

INDUSTRIAL WASTEWATER SLUDGE MANAGEMENT IN CHONGQING, CHINA

Victor Emery David Jr. (National University of Singapore), Jiang Wenchao (University of Tokyo), Yasinta John (University of Malaya), Md. Sahadat Hossain (Nanyang Technological University, Singapore)

Abstract:

Sludge, a byproduct of wastewater treatment, poses significant challenges due to its concentration of heavy metals, poorly biodegradable organic compounds, and potentially pathogenic organisms. In China, like many other countries, the management of sludge has become increasingly difficult with the rise in wastewater production. Issues such as technological limitations, funding constraints, and inadequate infrastructure exacerbate the problem, especially in rapidly developing cities like Chongqing. This paper examines existing methods for treating and disposing of industrial sludge in Chongqing and proposes suitable solutions. Research reveals that the current sludge treatment rate in Chongqing is only 10.08%, indicating a need for more effective strategies. Moreover, the lack of separation between industrial and domestic waste piping systems further complicates the issue. Given the rapid industrialization and urban expansion in Chongqing, there is a pressing need to address the potential health and environmental risks associated with unmanaged sludge. The paper evaluates various disposal methods, highlighting the high cost of incineration and the feasibility of composting as a more economical alternative. Considering Chongqing's population, technological capabilities, and economic conditions, composting emerges as a viable solution for sustainable sludge management.

Keywords: Sludge, sludge disposal, treatment, industrial wastewater, Chongqing, wastewater management.

EXPLOITING LOW-COST ADSORBENTS FOR HEAVY METAL BIOSORPTION

Dr. Azam Tabatabaee (National University of Malaysia), Dr. Fereshteh Dastgoshadeh (University of Tokyo, Japan), Dr. Akram Tabatabaee (University of Science and Technology, China)

Abstract:

This paper explores the utilization of various by-products as adsorbents to remove heavy metals from aqueous effluent solutions. By-products such as almond skin, walnut shell, sawdust, rice bran, and eggshell were assessed for their efficacy in adsorbing metal ions from aqueous solutions. Comparative analyses were conducted with commercially available adsorbents including ion exchange resins and activated carbon. Batch experiments were conducted to evaluate the adsorption capacity of these biomasses for metal ions such as $Cd(II)$, $Cr(III)$, $Ni(II)$, and $Pb(II)$ at a pH of 5. The efficiency of metal ion removal from synthetic wastewater by the biomasses was determined by measuring the final concentration of the wastewater. Eggshell demonstrated high levels of adsorption (98.6 – 99.7%) for $Pb(II)$ and $Cr(III)$ ions at a concentration of 50 mg/L, while walnut shell exhibited high levels of adsorption (35.3 – 65.4%) for $Ni(II)$ and $Cd(II)$. This study highlights the effectiveness of by-products as adsorbents for the removal of toxic ions from wastewater, with efficiency comparable to commercially available adsorbents but at a reduced cost. Furthermore, statistical analyses utilizing Independent Sample t Test and ANOVA Oneway indicate that there is no significant difference in the adsorption percentage of certain elements by by-products compared to commercial adsorbents.

Keywords: Adsorbents, heavy metals, commercial adsorbents, wastewater, by-products

ELECTROMAGNETIC PHENOMENA AND ATOM-FIELD INTERACTIONS IN CELLULAR BIOLOGY

Dr. Masroor H. S. Bukhari, Co-authored Dr. Z. H. Shah

University of Sydney, Australia

Abstract:

This theoretical and experimental study proposes the existence of intrinsic electromagnetic fields within living cells and investigates their resonant self-interaction and interaction with ambient electromagnetic fields. Our findings indicate the generation of intrinsic electromagnetic fields, in the form of radio-frequency and infra-red photons, within atoms—whether coupled or uncoupled—in cellular structures such as the cell cytoskeleton and plasma membrane. We present a model describing the interaction of these photons, either among themselves or with atoms, induced by single-photon or two-photon processes under dipole-dipole coupling. This resonance results in significant field amplification, potentially enabling resonant photons to undergo tunnelling as evanescent waves over short ranges, from a few nanometers to micrometers. This report suggests that these resonant photons could serve as intracellular signal communication devices and as connectors between macromolecules or cellular structures in the cell cytoskeleton, organelles, or membrane. We also provide an overview of an experimental technique and review some preliminary results concerning the detection of these fields produced in living cell membranes under physiological conditions.

Keywords: bioelectromagnetism, cell membrane, evanescent waves, photon tunnelling, resonance

INTRINSIC ELECTROMAGNETIC PHENOMENA AND ATOM-FIELD INTERACTIONS IN BIOLOGICAL CELLS

Dr. Masroor H. S. Bukhari

University of Sydney, Australia

Abstract:

This study explores the potential existence of intrinsic electromagnetic fields within living cells and their interaction with ambient electromagnetic fields based on both theoretical frameworks and experimental evidence. We propose that intrinsic electromagnetic fields, in the form of radio-frequency and infra-red photons, are generated within atoms, either coupled or uncoupled, within cellular structures such as the cell cytoskeleton and plasma membrane. A model is presented to elucidate the interaction between these photons and atoms through dipole-dipole coupling, induced by single-photon or two-photon processes, leading to field amplification. We argue that these resonant photons may undergo tunnelling as evanescent waves over short ranges (nanometers to micrometers), potentially serving as intracellular signal communicators and bridges between macromolecules or cellular structures. Additionally, we provide an overview of an experimental technique and preliminary results indicating the detection of these fields within living cell membranes under physiological conditions.

Keywords: bioelectromagnetism, cell membrane, evanescent waves, photon tunnelling, resonance

HAIR MECHANICAL PROPERTIES DEPENDING ON AGE AND ORIGIN

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University: Université de Lyon, France

Abstract:

Hair, a non-homogeneous complex material primarily composed of Keratin, holds significant social and biological importance for human beings. Throughout history, societal norms, such as reserving long hair for kings and nobles during the High Middle Ages, have underscored its cultural significance. While common interest in hair revolves around growth, types, and care, it also serves as a crucial biomaterial that exhibits variations depending on ethnic origin and age. For instance, hair color often signifies ethnic ancestry or age, with dark hair associated with Asiatic heritage, blond hair with Caucasians, and white hair with aging individuals.

In this study, various methodologies were employed to investigate the mechanical properties and fracture topography of hair, considering its type and age. A custom-designed tensile testing machine equipped with a microdisplacement system and a force sensor, limited to a peak load of 3N, facilitated tensile tests on hair samples. Analysis of the resulting curves and extracted values enabled comparisons of mechanical property evolution across different hair samples. Additionally, observations using a Scanning Electron Microscope (SEM) and an interferometer provided insights into cuticle state and fracture topography for each hair category.

Keywords: Hair, relaxation test, SEM, interferometer, mechanical properties.

IN VITRO STUDY OF ANTIBACTERIAL ACTIVITY OF CYMBOPOGON CITRATUS

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University of Sydney, Australia

Abstract:

Alcohol and water extracts of Cymbopogon citratus were investigated for antibacterial properties and phytochemical constituents. The extracts were screened against four gram-negative bacteria (Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Proteus vulgaris) and two gram-positive bacteria (Bacillus subtilis and Staphylococcus aureus) at four different concentrations (1:1, 1:5, 1:10, and 1:20) using the disc diffusion method. Antibacterial examination was conducted using disc diffusion techniques, while phytochemical constituents were investigated using standard chemical methods. Results indicated that the extracts inhibited the growth of standard and local strains of the organisms used. The treatments exhibited significant differences ($P = 0.05$). The minimum inhibitory concentration of the extracts against the tested microorganisms ranged between 150 mg/ml and 50 mg/ml. Alcohol extracts were generally found to be more effective than water extracts. Phytochemical analysis revealed the presence of alkaloids and phenols but the absence of cardiac and cyanogenic glycosides. The presence of alkaloids and phenols was inferred as being responsible for the antibacterial properties of the extracts.

Keywords: Cymbopogon citratus; gram-negative and gram-positive

THE FIRST PREVALENCE REPORT OF DIRECT IDENTIFICATION AND DIFFERENTIATION OF B. ABORTUS AND B. MELITENSIS USING REAL TIME PCR IN HOUSE MOUSE OF IRAN

Dr. Ali Doosti, Faculty of Veterinary Medicine, National University of Singapore

Dr. Saeed Moshkelani, Faculty of Veterinary Science, Universitas Indonesia

Abstract:

Brucellosis, a zoonotic disease, manifests with symptoms that are not exclusive to humans, and its traditional diagnosis relies on culture, serological methods, and conventional PCR. For more sensitive and specific detection and differentiation of Brucella spp., the real-time PCR method is recommended. This research aimed to determine the presence and prevalence of Brucella spp. and differentiate Brucella abortus and Brucella melitensis in house mice (Mus musculus) in western Iran. TaqMan analysis and single-step PCR were conducted on a total of 326 DNA samples extracted from mouse spleens. Out of the total samples, 128 (39.27%) tested positive for Brucella spp. by conventional PCR, with 65 and 32 out of the 128 specimens being positive for B. melitensis and B. abortus, respectively. These findings highlight a significant presence of this pathogen in the area, and real-time PCR proves considerably faster than current standard methods for identifying and differentiating Brucella species. To the best of our knowledge, this study marks the first prevalence report of direct identification and differentiation of B. abortus and B. melitensis by real-time PCR in mouse tissue samples in Iran.

Keywords: Differentiation, B. abortus, B. melitensis, TaqMan probe, Iran.

GENETIC ANALYSIS OF TICK SPECIES IN SAUDI ARABIA

Kholoud A. Al-Shammery, Badr El-Sabah A. Fetoh, Ahmed M. Alshammari

University: National University of Singapore, Singapore

Abstract:

Protein and esterase electrophoresis techniques were employed to genetically differentiate between two common tick species in Saudi Arabia. Engorged females of the camel tick Hyalomma dromedarii (Koch) (Acari: Ixodidae) and the cattle tick Boophilus annulatus (Say) (Acari: Ixodidae) were collected from infested camels and cattle in the animal resting house in the Hail region of the Kingdom of Saudi Arabia (KSA). The results revealed significant variations in both protein and esterase activity levels, indicating a high degree of polymorphism within and between the genera and species of Hyalomma and Boophilus. In conclusion, the protein and esterase electrophoretic analyses utilized in this study successfully distinguished among tick species commonly found in Saudi Arabia.

Keywords: Molecular biology, The camel tick Hyalomma dromedarii, The cattle tick Boophilus annulatus, Ticks.

IMPACT OF CARBON SOURCES ON TABTOXIN PRODUCTION: A STUDY ON PSEUDOMONAS SYRINGAE PV. TABACI, A B-LACTAM PHYTOTOXIN

Dr. N. Messaadia, Department of Microbiology, National University of Singapore

Abstract:

This study investigates the regulatory effects of various carbon substrates on tabtoxin production by an isolated pathogenic strain of Pseudomonas syringae pv. tabaci, the causative agent of tobacco wildfire. The organism was cultivated in batch culture on Woolley's medium under controlled conditions (28°C, 200 rpm) for a duration of 5 days. Bacterial growth was monitored using optical density (OD) at 620 nm, while tabtoxin production was quantified using the Escherichia coli (K-12) bioassay technique. Results indicate that both growth and tabtoxin production were significantly influenced by the type of carbon substrates utilized, including sugars, amino acids, and organic acids, either as sole carbon sources or as supplements. Particularly noteworthy was the enhanced tabtoxin production observed in the presence of certain amino acids when used as either sole carbon sources or supplements.

Keywords: Amino acid supplementation, carbon substrates, batch culture, Pseudomonas syringae pv. tabaci

OPTIMIZATION OF GROWTH CONDITIONS FOR ACIDIC PROTEASE PRODUCTION FROM RHIZOPUS OLIGOSPORUS THROUGH SOLID STATE FERMENTATION OF SUNFLOWER MEAL

Dr. Abdul Rauf Muhammad Irfan, Muhammad Nadeem, Ishtiaq Ahmed, Hafiz Muhammad Nasir Iqbal

University of Tokyo, Japan

Abstract:

Rhizopus oligosporus was utilized in this research for the synthesis of protease enzyme via Solid State Fermentation (SSF). Sunflower meal, a by-product of the oil industry, augmented with organic salts, was utilized for protease enzyme production. This study aimed to explore various parameters affecting protease productivity, its yields, and to optimize basal fermentation conditions. Optimal conditions for protease production using sunflower meal as a substrate were determined, including inoculum size (1%), substrate concentration (20 g), pH (3), cultivation period (72 h), incubation temperature (35°C), substrate to diluent ratio (1:2), and addition of tween 81 (1 mL). The maximum production of protease achieved with a cost-effective substrate at low concentration, along with stability at acidic pH, renders the strain and its enzymes valuable for various industries.

Keywords: Acidic protease, Rhizopus oligosporus, Media optimization, Solid state Fermentation

PREVALENCE OF EPSTEIN-BARR VIRUS LATENT MEMBRANE PROTEIN-1 IN JORDANIAN PATIENTS WITH HODGKIN'S LYMPHOMA AND NON-HODGKIN'S LYMPHOMA

Dr. Fawzi Irshaid, Dr. Adnan Jaran, Dr. Fatiha Dilmi, Dr. Khaled Tarawneh, Dr. Raji Hadeth

University: National University of Singapore, Singapore

Abstract:

This study aimed to assess the incidence of EBV infection in Hodgkin's lymphoma (HL) and non-Hodgkin's lymphoma (NHL) among Jordanian patients. A cohort of 55 lymphoma patients was analyzed, comprising 30 HL and 25 NHL cases. HL presented with various subtypes, with mixed cellularity (MC) being the most common, followed by nodular sclerosis (NS). In NHL cases, high grade was predominant, followed by low grade. Immunostaining for latent membrane protein-1 (LMP-1) was used to detect EBV presence. LMP-1 expression was more prevalent in HL patients (60.0%) compared to NHL patients (32.0%), with the MC subtype showing a higher frequency (61.11%) than NS (28.57%). No significant age or gender differences were observed in EBV infection among HL patients. Conversely, EBV prevalence was lower in NHL patients under 50 (16.66%) compared to those aged 50 or above (46.15%). Additionally, EBV infection was more common in female NHL patients (38.46%) than males (25%). Intermediate grade NHL cases exhibited a higher frequency of EBV infection (60.0%) compared to low (25%) or high grades (25%). In summary, the analysis of LMP-1 expression suggests a significant role for this viral oncogene in EBV-associated lymphoma pathogenesis. These findings support previous research indicating a link between EBV and lymphoma, emphasizing the importance of managing EBV infection to reduce lymphoma risk.

Keywords: Hodgkin lymphoma, Epstein Barr virus, hematoxylin, infection, LMP-1 expression.

ENHANCED APPROACH FOR COMPUTING LINEAR AND NONLINEAR RESPONSES OF SDOF SYSTEMS UNDER ARBITRARY BASE EXCITATIONS

Dr. Hossein Kabir, Dr. Mojtaba Sadeghi

University of Sydney, Australia

Abstract:

Determining the linear and nonlinear responses of a standard single-degree-of-freedom system (SDOF) has traditionally been a time-intensive process. This research aims to enhance the efficiency of the well-established Newmark method, making it both more time-effective and accurate, especially when dealing with nonlinear systems. The proposed method's effectiveness is validated through simulations involving three historical seismic events: the Tabas earthquake of 1978, the El Centro earthquake of 1940, and the MEXICO CITY/SCT earthquake of 1985. These simulations, applied to an SDOF system, enable the computation of key parameters such as the strength reduction factor, yield pseudo acceleration, and ductility factor.

Keywords: Single-degree-of-freedom system, linear acceleration method, nonlinear excitation analysis, equivalent displacement method

IMPACT OF LOCAL FACTORS ON VIABLE FUNGAL CONCENTRATIONS AND FLORA IN SCHOOL BUILDINGS

H. Salonen, E. Castagnoli, C. Vornanen-Winqvist, R. Mikkola, C. Duchaine, L. Morawska, J. Kurnitski (Aalto University, Finland)

Abstract:

Exposure to bioaerosols from fungal sources is associated with a wide range of health effects among occupants. Although the precise role of these aerosols in causing symptoms and diseases is not well understood, the significant impact of bioaerosol exposure on human health is well recognized. Thus, it is crucial to identify all contributing factors related to the concentration of fungi in indoor air. In this study, we reviewed and summarized the various factors affecting the concentrations of viable fungi in school buildings. The literature review was conducted using PubMed and Google Scholar, supplemented by reference lists of selected articles. According to the literature, the main factors influencing viable fungi concentrations in school buildings include moisture damage in building structures, seasonal variations (temperature and humidity conditions), ventilation type and rate, the number and activities of occupants, and diurnal variations. This study provides valuable information that can aid in the interpretation of fungal analysis and reduce microbial exposure by mitigating known sources and contributing factors. However, further research is needed to explore different local factors contributing to human microbial exposure in school buildings, as well as other building types and indoor environments.

Keywords: Fungi, concentration, indoor, school, contributing factor.

ADHESION PERFORMANCE ACCORDING TO LATERAL REINFORCEMENT METHOD OF TEXTILE

Jungbhin You, Taekyun Kim, Jongho Park, Sungnam Hong, Sun-Kyu Park

University of California, Berkeley, USA

Abstract:

Reinforced concrete has been primarily utilized in the construction sector due to its exceptional durability. Nonetheless, the corrosion of reinforcement steels, resulting from surface damage to the concrete, can compromise both durability and safety. Recently, there has been ongoing research into textiles to address the vulnerabilities of reinforced concrete. Previous studies have focused solely on longitudinal length experiments. Therefore, to examine adhesion performance in relation to lattice shape and embedded length, pull-out tests were conducted on the roving, considering parameters such as the number of lateral reinforcements, the length of the lateral reinforcement, and the spacing of the lateral reinforcement. The findings indicated that neither the number of lateral reinforcements nor their length significantly influenced load variation concerning adhesion performance. Only the reinforcement spacing impacted the load analysis results.

Keywords: Adhesion performance, lateral reinforcement, pull-out test, textile.

CYCLIC BEHAVIOR OF WIDE BEAM-COLUMN JOINTS WITH SHEAR STRENGTH RATIOS OF 1.0 AND 1.7

Roy Y. C. Huang, J. S. Kuang, Hamdolah Behnam,

University: Alexandria University, Egypt

Abstract:

Beam-column connections play a crucial role in the reinforced concrete moment resisting frame (RCMRF), one of the most commonly used structural systems globally. The premature failure of such connections would severely limit the seismic performance and increase the vulnerability of RCMRF. Over the past decades, researchers have primarily focused on investigating the structural behavior and failure mechanisms of conventional beam-column joints, where the beam width is either smaller than or equal to the column width. In contrast, studies on wide beam-column joints have been scarce. This paper presents preliminary experimental results of two full-scale exterior wide beam-column connections, which are mainly designed and detailed according to ACI 318-14 and ACI 352R-02, under reversed cyclic loading. The ratios of the design shear force to the nominal shear strength of these specimens are 1.0 and 1.7, respectively, to explore differences in joint shear strength between experimental results and predictions by design codes of practice. Flexural failure dominated in the specimen with a ratio of 1.0, where full-width plastic hinges were observed, while both beam hinges and post-peak joint shear failure occurred for the other specimen. No sign of premature joint shear failure was found, which is inconsistent with ACI codes' prediction. Finally, a modification of current codes of practice is provided to accurately predict the joint shear strength in wide beam-column joints.

Keywords: Joint shear strength, reversed cyclic loading, seismic codes, wide beam-column joints.

EFFECTS OF PIER MODIFICATION STRATEGIES ON SCOUR MITIGATION AROUND BRIDGE PIERS

Rashid Farooq, Abdul Razzaq Ghumman, Hashim Nisar Hashmi

University: Alexandria University, Egypt

Abstract:

Bridge piers frequently fail globally, endangering entire structures due to the phenomenon of scouring. Scouring has been associated with catastrophic failures resulting in the loss of human lives. Various techniques have been utilized to mitigate the scouring process to enhance bridge design. Pier modifications play a crucial role in controlling scouring in the vicinity of the pier. This experimental study aims to assess the effectiveness of pier modifications and the temporal development of scour depth around a bridge pier by implementing a collar, a cable, or openings under consistent flow conditions. Providing a collar around the octagonal pier reduced the scour depth more effectively than the other two configurations. The collar around the octagonal pier was found to be the most effective in reducing scour, with a 19.5% reduction in scour depth in front of the pier compared to the octagonal pier without modifications. Similarly, the scour depth around the octagonal pier with a cable was less than that with openings. The scour depth around an octagonal pier was also compared to a plain circular pier, showing a 9.1% reduction.

Keywords: Scour, octagonal pier, collar, cable, openings.

SEISMIC PERFORMANCE OF RC KNEE JOINTS UNDER CYCLIC LOADING

S. Mogili, J. S. Kuang, N. Zhang

(Stanford University, USA

Abstract:

Knee joints, the beam-column connections found at the roof level of moment-resisting frame buildings, inherently differ from conventional interior and exterior beam-column connections in how forces from adjoining members are transferred into and resisted by the joint. A knee connection has two distinct load-resisting mechanisms for closing and opening actions that act simultaneously under reversed cyclic loading. Despite the significant differences in shear resistance behavior in knee joints, major design codes worldwide lack special provisions due to insufficient research on knee connections. To understand the relative importance of opening and closing actions in design, it is essential to study knee joints under varying shear stresses, particularly at higher opening-to-closing shear stress ratios. Three knee joint specimens, subjected to different input shear stresses, were designed to produce varying ratios of input opening to closing shear stresses. The design ensured that the ratio of flexural strength of beams, considering axial forces in opening to closing actions, was maintained at 0.5, 0.7, and 1.0, resulting in the required variation of opening to closing joint shear stress ratios among the specimens. The behavior of these specimens was then meticulously studied in terms of closing and opening capacities, hysteretic behavior, and envelope curves to understand the differences in joint performance. Based on these observations, an attempt was made to suggest design guidelines for knee joints, emphasizing the relative importance of opening and closing actions. Specimens with relatively higher opening stresses were found to be more vulnerable under seismic loading.

Keywords: Knee-joints, large-scale testing, opening and closing shear stresses, seismic performance.

INNOVATIVE ROTOR DESIGNS FOR THE COUNTER FLOW HEAT RECOVERY FAN

Christoph Speer,

University: Alexandria University, Egypt

Abstract:

Decentralized ventilation systems should combine a compact and cost-effective design with high aerodynamic and thermal efficiency. The Counter Flow Heat Recovery Fan (CHRF) addresses these requirements by utilizing a single cross flow fan with a large number of blades to generate both airflows, functioning simultaneously as a regenerative counter flow heat exchanger. The successful development of the initial laboratory prototype has demonstrated the potential of this ventilation system. Condensate forming on the fan blades' surfaces during cold and dry seasons can be recuperated due to the unique mode of operation, thus eliminating the need for frost protection and condensate drainage. By implementing system-specific solutions for flow balancing and summer bypass, the required functionality is ensured. The scalability of the CHRF concept allows for its application in both renovation projects and new constructions, ranging from single-room units to systems designed for office buildings. The high aerodynamic and thermal efficiency, coupled with a reduced number of necessary mechatronic components, should result in lower investment and operating costs. The rotor is the critical component of this system, and its requirements and possible implementation variants are discussed.

Keywords: CHRF, counter flow heat recovery fan, decentralized ventilation system, renovation.

EXPERIMENTAL INVESTIGATION OF GEOTEXTILE IMPACT ON ENHANCING SOIL BEARING CAPACITY IN AGGREGATE SURFACED ROADS

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University of Illinois, USA

Abstract:

The utilization of geosynthetics is pivotal in highway construction, particularly for roads without additive layers such as asphalt concrete or cement concrete, or within subgrade layers that influence the bearing capacity of unbounded layers. This laboratory experimental study aims to evaluate changes in the load-bearing capacity of reinforced soil using these materials in highway roadbeds, considering geotextile properties. California Bearing Ratio (CBR) test samples were prepared with two types of soil: clayey and sandy, containing both non-reinforced and reinforced soil. The samples included three types of geotextiles with varying characteristics (150, 200, 300 g/m²) and depths (H= 5, 10, 20, 30, 50, 100 mm), and were categorized into two forms, one-layered and two-layered, to perform defined tests. Results indicated that soil bearing characteristics improved with the use of one layer of geotextile in clayey and sandy samples reinforced by geotextile. However, the bearing capacity of the soil, with a geotextile layer depth exceeding 30 mm, showed no significant effect. Furthermore, the application of two-layered geotextile in material samples increased soil resistance, but also demonstrated that adding multiple or heavier geotextile layers altered the soil's natural composition, rendering results unreliable.

Keywords: Reinforced soil, geosynthetics, geotextile, transportation capacity, CBR experiments.

FLOOD ADAPTATION STRATEGIES IN LOW-INCOME SETTLEMENTS IN CHIANG MAI, THAILAND

Nachawit Tikul,

University of California, Berkeley, USA

Abstract:

This study aimed to determine low-income housing adaptations for flooding, which causes living problems and housing damage, and the results from improvement. Three low-income settlements in Chiang Mai which experienced different flood types, i.e., flash floods in Samukeepattana, drainage floods in Bansanku, and river floods in Kampangam, were chosen for the study. Almost all of the residents improved their houses to protect the property from flood damage by changing building materials to flood damage resistant materials for walls, floors, and other parts of the structure that were below the base of annual flood elevation. They could only build some parts of their own homes, so hiring skilled workers or contractors was still important. Building materials which have no need for any special tools and are easy to access and use for construction, as well as low cost, are selected for construction. The residents in the three slums faced living problems for only a short time and were able to cope with them. This may be due to the location of the three slums near the city where assistance is readily available. But the housing and the existence in the slums can endure only the regular floods and residents still have problems in unusual floods, which have been experienced 1-2 times during the past 10 years. The residents accept the need for evacuations and prepare for them. When faced with extreme floods, residents have evacuated to the nearest safe place such as schools and public buildings, and come back to repair the houses after the flood. These are the distinguishing characteristics of low-income living which can withstand serious situations due to the simple lifestyle. Therefore, preparation of living areas for use during severe floods and encouraging production of affordable flood-resistant materials should be areas of concern when formulating disaster assistance policies for low-income people.

Keywords: Flooding, low-income settlement, housing, adaptation.

ANALYSIS OF SOIL-STRUCTURE INTERACTION EFFECTS ON DYNAMIC PARAMETERS OF STEEL STRUCTURES: A CASE STUDY FROM TAIWAN

Vahidreza Mahmoudabadi, Omid Bahar, Mohammad Kazem Jafari

National University of Singapore

Abstract:

In various engineering applications, structural analysis often assumes a rigid foundation, yet considering the flexibility of the structure-bed interface can significantly influence structural response. This study investigates the impact of soil-structure interaction on the dynamic properties of a steel structure, particularly focusing on elastic and inelastic behaviors. Our analysis is based on recorded structure accelerations during Taiwan's severe Chi-Chi earthquake across different floors of an eight-story steel bending frame structure, designed using a displacement-based direct method ensuring weak beam - strong column functionality. Our findings reveal that employing various identification techniques such as reverse Fourier transform or transfer functions can accurately determine specific dynamic parameters of the structure rather than evaluating all simultaneously (including mode frequencies, mode shapes, damping, rigidity, etc.). Analysis of response data demonstrates that while the first mode of the structure remains relatively unaffected, considering soil-structure interaction influences the higher modes. Furthermore, the response transfer function of different stories, where plastic hinges occur in structural components, yields consistent results.

Keywords: System identification, dynamic characteristics, soil-structure interaction, steel frame structures, displacement-based design.

ANALYTICAL APPROACH TO MANNING'S EQUATION FOR RECTANGULAR CHANNELS

Dr. Jane Doe

Abstract:

The application of the Manning equation to rectangular channels provides a unique normal depth value for uniform flow, given specific channel geometry, discharge, roughness, and slope. The flow type (supercritical or subcritical) is determined based on the relationship between normal and critical depths under given channel conditions, regardless of flow uniformity. There is no universal solution for the Manning equation to determine flow depth for a specific discharge because the cross-sectional area and hydraulic radius form a complex function of depth. Traditional methods to solve for normal depth in rectangular channels include: 1) trial-and-error; 2) creating non-dimensional graphs; 3) compiling tables with non-dimensional parameters. This paper presents a semi-analytical solution to Manning's equation for determining flow depth given the flow rate in rectangular open channels. The solution was derived by expressing Manning's equation in a non-dimensional form and expanding it using the Maclaurin series, considering terms up to the fourth power. The resulting equation is a quartic equation in standard form, solved by breaking it into two quadratic factors. The proposed solution for Manning's equation is applicable across a broad range of parameters, with a maximum error margin of -1.586%.

Keywords: Channel design, civil engineering, hydraulic engineering, open channel flow, Manning's equation, normal depth, uniform flow.

INTEGRATING SUSTAINABILITY DIMENSIONS INTO URBAN INFORMATION MODELLING

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Abstract:

This paper aims to explore the roles of sustainability dimensions in urban information modelling and to propose the necessary sustainability criteria to establish a sustainable planning framework for enhancing current cities and developing future smart cities. The paper is organized into two sections. The first section reviews a broad and extensive array of interdisciplinary literature from the past fifteen years to conceptualize the terms 'sustainable city' and 'smart city,' and map their related criteria to urban information modelling. The second section analyzes two approaches related to urban information modelling: statistical and dynamic approaches, and evaluates their effectiveness in developing city action plans. The paper contends that statistical approaches for integrating sustainability dimensions in urban information modelling are of limited value. Although these approaches are popular for addressing other dimensions like utility and service management in the development and action plans of global cities, they fail to address the dynamics across various city sectors in terms of economic, environmental, and social criteria. The paper proposes an integrative dynamic and interdisciplinary planning approach for embedding sustainability dimensions into urban information modelling frameworks. This approach will facilitate optimal planning and execution of priority projects and investments. The approach aims to achieve three main goals: (1) better development and action plans for global cities, (2) support the creation of an integrative dynamic and interdisciplinary framework that includes economic, environmental, and social sustainability criteria, and (3) identify areas that need more focus in the development of future sustainable and smart cities. The paper introduces an innovative method for urban information modelling and presents a well-balanced hierarchy of sustainability criteria, contributing to a relatively new research area in terms of development and management.

Keywords: Urban information modelling, smart city, sustainable city, sustainability dimensions, sustainability criteria, city development planning.

UTILIZATION OF BOTTOM ASH IN GEOTECHNICAL APPLICATIONS FOR ENVIRONMENTAL SUSTAINABILITY: A CASE STUDY FROM INDIA

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Abstract:

Bottom ash is a by-product of the combustion process of coal in furnaces in the production of electricity in thermal power plants. In India, about 75% of total power is produced by using pulverized coal. The coal of India has a high ash content which leads to the generation of a huge quantity of bottom ash per year posing the dual problem of environmental pollution and difficulty in disposal. This calls for establishing strategies to use this industry by-product effectively and efficiently. However, its large-scale utilization is possible only in geotechnical applications, either alone or with soil. In the present investigation, bottom ash was collected from National Capital Power Station Dadri, Uttar Pradesh, India. Test samples of bottom ash admixed with 20% clayey soil were prepared and treated with different cement content by weight and subjected to various laboratory tests for assessing its suitability as an engineered construction material. This study has shown that use of 10% cement content is a viable chemical additive to enhance the mechanical properties of bottom ash, which can be used effectively as an engineered construction material in various geotechnical applications. More importantly, it offers an interesting potential for making use of an industrial waste to overcome challenges posed by bottom ash for a sustainable environment.

Keywords: Bottom ash, environmental pollution, solid waste, sustainable environment, waste utilization.

IMPACT OF LOCAL SOIL CONDITIONS ON OPTIMUM LOAD FACTORS FOR SEISMIC BUILDING DESIGN

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Abstract:

The selection of optimal load factors (dead, live, and seismic) for building design is contingent upon the seismic characteristics of the ground motion, which in turn, are heavily influenced by the soil conditions at the construction site. This study examines the correlation between soil type and load factors, employing a methodology aimed at minimizing life cycle costs while ensuring that the probability of structural failure remains below a predetermined threshold. The life cycle cost model considered encompasses various cost components. Two distinct groups of reinforced concrete buildings are subjected to analysis: one set (comprising 4-, 7-, and 10-story structures) situated on stable ground (with a dominant period Ts=0.5 s), and the other (comprising 6-, 12-, and 16-story buildings) on soft soil (Ts=1.5 s) within Mexico City. Each building group is designed using different load factor combinations. Incremental dynamic analyses are employed to determine the statistics of maximum inter-story drifts, indicative of structural capacity. The buildings situated on stable ground are subjected to 10 intense seismic events, while those on soft soil are exposed to 13 strong ground motions, all corresponding to seismic subduction events with magnitudes M=6.9. Subsequently, structural damage and expected total costs are estimated for each building group. The study concludes that the optimal load factor combination varies depending on the soil conditions, with distinct requirements for buildings on stable ground compared to those on soft soil.

Keywords: Life-cycle cost, optimal load factors, reinforced concrete buildings, total costs, soil type.

SEISMIC VULNERABILITY ASSESSMENT OF WEIR STRUCTURES CONSIDERING CONCRETE MATERIAL AGING

Prof. HoYoung Son, Dr. DongHoon Shin, Dr. WooYoung Jung

University: Hanyang University, South Korea

Abstract:

This study presents a framework for assessing the seismic vulnerability of concrete weir structures under strong seismic ground motions, with a focus on the aging degradation of concrete material. The influence of concrete aging on weir structures is analyzed using probabilistic risk assessment, considering both pre- and post-deterioration conditions. Concrete aging is simulated by assuming the performance of the weir structure after five years, during which the elastic modulus of the concrete is reduced by approximately one-tenth compared to its initial condition. Nonlinear finite element analysis is conducted using the ABAQUS platform to model concrete deterioration in weir structures. The results indicate that simplified concrete degradation leads to a significant increase of almost 45% in the probability of failure at Limit State 3, compared to the initial construction stage, highlighting the importance of considering concrete aging in the seismic fragility analysis of weir structures.

Keywords: Weir, Finite Element Method (FEM), Concrete, Fragility, Aging

OPTIMAL DESIGN PARAMETERS FOR BUILDINGS WITH BUCKLING-RESTRAINED BRACES

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University: National Autonomous University of Mexico

Abstract:

The vulnerability of buildings to seismic activity has been extensively researched since the mid-20th century. In response to the structural and non-structural damage caused by intense ground motions, various seismic energy dissipation devices, including buckling-restrained braces (BRB), have been proposed. BRBs have proven effective in absorbing a significant portion of the energy transmitted to the structure during seismic events. This paper presents a design approach for buildings incorporating BRB elements, based on a seismic Displacement-Based formulation, developed by the authors. The method offers a practical and straightforward design approach that simplifies the tasks of structural engineers. In this study, the method is utilized to design the structure-BRB damper system. The objective is to extend and apply a methodology to determine the optimal combination of design parameters for multiple-degree-of-freedom (MDOF) structural frame – BRB systems, considering both initial costs and an appropriate engineering demand parameter simultaneously. The design parameters include the stiffness ratio ($\alpha = K_{frame}/K_{total}$) and the strength ratio ($\gamma = V_{damper}/V_{total}$), where K represents structural stiffness and V represents structural strength. The subscripts "frame", "damper", and "total" denote the structure without dampers, the BRB dampers, and the total frame-damper system, respectively. The selection of the optimal combination of design parameters α and γ is based on an analysis of initial costs and the structural dynamic response of the frame-damper system. The methodology is applied to a 12-story, 5-bay steel building with BRBs, situated on intermediate soil in Mexico City. The study identifies the optimal combination of design parameters α and γ for the BRB-equipped building under investigation.

Keywords: Optimal design parameters, BRB, buildings with energy dissipation devices, buckling-restrained braces, initial costs.

INVESTIGATION OF COMPOSITE CANTILEVER BEAM BEHAVIOR WITH EXTERNAL PRESTRESSING: A NONLINEAR FINITE ELEMENT ANALYSIS

Dr. Rahim I. Liban Dr. Nalan Tayşi

Abstract:

This study presents a nonlinear finite element analysis aimed at understanding the behavior of cantilever composite steel-concrete beams under external prestressing until failure. The term 'pre-' indicates the stressing of high-strength external tendons in the steel beam section prior to the addition of the concrete slab. The composite beam consists of a concrete slab connected to a steel I-beam using perfect shear connectors between the concrete slab and the steel beam, which is subjected to static loading. A finite element analysis is conducted to investigate the effects of external prestressed tendons on the composite steel-concrete beams by varying the locations (profiles) of the tendons. The ANSYS version 12.1 computer program is utilized to analyze the three-dimensional model of the cantilever composite beam. The model provides various outputs, including the load-displacement behavior at the cantilever end and in the middle span of the simple support part.

Keywords: Composite steel-concrete beams, external prestressing, finite element analysis, ANSYS.

NUMERICAL ANALYSIS OF AFFORDABLE RUBBER ISOLATION SYSTEMS FOR MASONRY DWELLINGS IN SEISMICALLY ACTIVE REGIONS

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Abstract:

Housing structures in developing nations often lack adequate seismic protection, especially those built with masonry. Despite the vulnerability, people opt for these structures due to their low cost and ease of construction. Addressing seismic resilience in masonry constructions remains a focal point for researchers. In this research endeavor, we introduce a cost-effective seismic isolation system for masonry buildings utilizing fiber-reinforced elastomeric isolators. The proposed elastomeric material comprises rubber pads and fiber lamina, resulting in a significantly lower cost compared to conventional isolators. Through finite element (FE) analysis, we forecast the performance of these low-cost rubber isolators under moderate deformations. The FE model incorporates a hyperelastic material property for the rubber pad, employing the Yeoh hyperelasticity model, with coefficients derived from available experimental data. Utilizing the shear behavior of the elastomers, we implement this isolation system on a scale model of a masonry dwelling. To simulate the attachment of isolators to the structure, we model the shear behavior using a damped nonlinear spring model, thereby reducing computational complexity. Various ground motion scenarios are applied to assess sensitivity, with roof acceleration and wall tensile damage serving as key performance indicators for the isolators. Our study employs a concrete damage plasticity model to simulate masonry behavior within the nonlinear range, leveraging the capabilities of the Abaqus FE software. The outcomes demonstrate the effectiveness of the proposed low-cost isolators in reducing roof acceleration and mitigating damage in masonry structures. Furthermore, we monitor the shear deformation of isolators during seismic events to evaluate their applicability. The results indicate minimal deformations of isolators on the benchmark one-story building, affirming their feasibility.

Keywords: Masonry, affordable elastomeric isolator, finite element analysis, hyperelasticity, damped nonlinear spring, concrete damage plasticity.