VI. ULUSLARARASI
BİLİMSEL VE MESLEKİ
ÇALIŞMALAR KONGRESİ – MÜHENDİSLİK
(BILMES EN 2021)
ÖZET METİN BİLDİRİ KİTABI



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SCIENTIFIC AND VOCATIONAL
STUDIES CONGRESS – ENGINEERING
(BILMES EN 2021)
ABSTRACT PROCEEDINGS BOOK

ARALIK / DECEMBER 2021

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KONGRE PROGRAMI / CONFERENCE SCHEDULE

ORAL PRESENTATION

24 December 2021 - Friday

Session 1

Hall Name: BILMES EN 2021 **Meeting Hall Chairman :** Lect. Tolga Yücehan
Meeting Hall Vice-Chairman: Lect. Celal Altıntaş

Time	Title of Study	Authors	Corresponding Author	Presenter
11:00 - 11:15	INTEGRATED REMOTE SENSING AND GIS APPROACH FOR SPATIAL MODELING OF WATER QUALITY IN NAKIVUBO CHANNEL	Abdirahman Saleban Yusuf, Farooq Abubakar Atiku, Abdulfatah Abdu Yusuf, Adiya ZISG, Onura Martins, Abdulqayoom Tunji Lawal	Abdirahman Saleban Yusuf	Farooq Abubakar Atiku
11:15 - 11:30	A MULTI-REGRESSION MODEL BASED ON MONTHLY RAINFALL PROGNOSTICATION: CASE STUDY OF KASESE DISTRICT, IN EAST AFRICA	Ali Abdi Adam, Abdishukri Said Shire, Abdirizak Tahir Ayanle, Mohamed Salaheldin, Mohammed Musa Aliyu, Farooq Abubakar Atiku, Martins Onyekwelu Onuorah, Tunji Lawal Abdulquyyoom	Ali Abdi Adam	Farooq Abubakar Atiku
11:30 - 11:45	INVESTIGATION AND ANALYSIS OF HEAVY METALS AND METALLOIDS IN CHARCOAL, ASH AND INSITU SOIL DURING THE SMOLDERING PROCESS OF AN EARTH KILN IN LUWERO, UGANDA	M. K. Ndaula, F. A. Atiku, A. A.Yusuf	M. K. Ndaula	Farooq Abubakar Atiku
11:45 - 12:00	DETERMINATION OF THE EFFECT OF OZONE TREATMENT ON PANELIST'S SENSORY EVALUATION AND PREFERENCE OF TREATED BROILER'S MEAT	Manal Hadi Ghaffoori Kanaan, Sura Saad Abdullah	Manal Hadi Ghaffoori Kanaan	Manal Hadi Ghaffoori Kanaan
12:00 - 12:15	EXPLORING AND OPTIMIZATION CYBERSPACE THREAT FOR RESEARCH DATA CENTRES IN HIGHER INSITUTIONS	Yakubu Ajiji Makeri	Yakubu Ajiji Makeri	Yakubu Ajiji Makeri

Break

25 December 2021 - Saturday

Session 2

Hall Name: BILMES EN 2021 **Meeting Hall Chairman :** Lect. Tolga Yücehan
Meeting Hall Vice-Chairman: Lect. Celal Altıntaş

Time	Title of Study	Authors	Corresponding Author	Presenter
09:00 - 09:15	EFFECT OF WELDING CURRENT ON SIMILAR AND DISSIMILAR METAL WELDING IN STAINLESS STEEL SPOT RESISTANCE WELDING	Bedirhan Güraydın, Funda Tutumlu, Hamdi Ekici, Onur Ay	Funda Tutumlu	Funda Tutumlu
09:15 - 09:30	INVESTIGATION OF SURFACE OXIDE FORMATION IN COPPER WIRE ROD PRODUCED BY CONTINUOUS CASTING AND HOT ROLLING	Orhan Akyüz	Orhan Akyüz	Orhan Akyüz
09:30 - 09:45	EXAMINING THE EFFECTS OF FIBER ADDITIVES ON PERFORMANCE CHARACTERISTIC OF BITUMEN HOT MIXTURE	Gizem Fırat, Ahmet Emre Şahin , Ali Osman Fırat	Gizem Fırat	Gizem Fırat
09:45 - 10:00	A BRIEF STUDY FOCUSING NITROGEN SURFACE AREA OPTIMIZATION OF SILICA FOR ENHANCING PHYSICAL PROPERTIES OF RUBBER COMPOUNDS	Ceren Özbay, Evran Karaman, Murat Karaaslan, Levent Kaya , Bilal Gürlük, İshak Ok, Seda Yurteri	Ceren Özbay	Ceren Özbay
10:00 - 10:15	ENAMEL COATED STRANDED CONDUCTOR PRODUCTION FOR HIGH ALTERNATING CURRENT APPLICATIONS	Orhan Akyüz, Güven Yücel, Alper Özdemir, Ufuk Gülten	Orhan Akyüz	Orhan Akyüz

10:15 - 10:30	INVESTIGATION OF THE EFFECT OF VISCOELASTIC PROPERTIES ON THE SERVICE LIFE OF CARBON FIBER REINFORCED COMPOSITE BOW MATERIALS USED IN TWISTING MACHINES	Orhan Akyüz, Özgür Tokdemir	Orhan Akyüz	Orhan Akyüz
Break				

Session 3

Hall Name: BILMES EN 2021

Meeting Hall Chairman : Lect. Tolga Yücehan
Meeting Hall Vice-Chairman: Lect. Celal Altıntaş

Time	Title of Study	Authors	Corresponding Author	Presenter
11:00 - 11:15	THE COMPARISON OF SIMULATIONS AND EXPRIMENTAL RESULTS OF A PID CONTROLLED FIN ACTUATION SYSTEM	İbrahim Özçiçek, Arif Ankaralı, Ali İzzet Alkılıç	İbrahim Özçiçek	İbrahim Özçiçek
11:15 - 11:30	ELASTOMER USE IN WAGON BUFFERS AND DRAW GEAR	Emre Görgün	Emre Görgün	Emre Görgün
11:30 - 11:45	EFFECTS OF RUNNER INLET SIZE ON PART QUALITY IN PRODUCTION OF PMMA REFLECTOR BY INJECTION MOLDING	Mehmet Can Aşcı, Harun Koçak, Çetin Karataş	Mehmet Can Aşcı	Mehmet Can Aşcı
11:45 - 12:00	DESIGN AND ANALYSIS OF A MINI TURBO JET ENGINE; A CASE STUDY	Merdin Danışmaz, Giresse Ngounou Defo	Merdin Danışmaz	Giresse Ngounou Defo
12:00 - 12:15	70 KG END CARRYING CAPACITY CARTESIAN ROBOT DESIGN	Ecenur Görer, Murat Akdağ	Ecenur Görer	Ecenur Görer
12:15 - 12:30	INVESTIGATION OF THE EFFECT OF HEATING WATER WITH MICROSCALE COPPER PARTICLES ON THE THERMAL PERFORMANCE OF A SHELL AND TUBE HEAT EXCHANGER: A PARAMETRIC STUDY	Merdin Danışmaz, Melahat Aka, Mert Süer	Merdin Danışmaz	Melahat Aka
Break				

Session 4

Hall Name: BILMES EN 2021

Meeting Hall Chairman : Lect. Tolga Yücehan
Meeting Hall Vice-Chairman: Lect. Celal Altıntaş

Time	Title of Study	Authors	Corresponding Author	Presenter
13:00 - 13:15	HOLOGRAPHIC ANTENNA DESIGN FOR MILIMETER WAVES	Özge Yanaz Çınar, Tamer Aslan	Tamer Aslan	Tamer Aslan
13:15 - 13:30	AUTOMATED LOW VOLTAGE GRID TECHNICAL ANALYSIS PLATFORM	Gökhan Batar, Ekin Başaran, Canan Şişman Korkmaz, Rıfat Anıl Aydın, Alper Terciyanlı	Ekin Başaran	Ekin Başaran
13:30 - 13:45	ENERGY MANAGEMENT SYSTEMS FOR DATA CENTERS	Canan Şişman Korkmaz, İlayda Aygün	Canan Şişman Korkmaz	Canan Şişman Korkmaz
13:45 - 14:00	INVESTIGATION OF BUILDINGS WITH RAPID STREET SURVEY IN ANKARA CANKAYA OGUZLAR REGION RAPID STREET SURVEY	Şule Bakırcı Er, Caner Yeniçelik	Şule Bakırcı Er	Şule Bakırcı Er
14:00 - 14:15	RAPID STREET SURVEY ASSESSMENT OF BUILDINGS IN ANKARA CITY CANKAYA REGION HARBIYE DISTRICT	Şuler Bakırcı Er, Muzaffer Emre Şahinli	Şule Bakırcı Er	Şule Bakırcı Er
14:15 - 14:30	COMPARISON OF ARTIFICIAL INTELLIGENCE BASED MODELS DEVELOPED FOR PREDICTION OF LIQUEFACTION INDUCED LATERAL SPREADS	Okan Çetinkaya, Pelin Özener	Okan Çetinkaya	Okan Çetinkaya
Break				

Session 5				
Hall Name: BILMES EN 2021		**Meeting Hall Chairman :** Lect. Tolga Yücehan **Meeting Hall Vice-Chairman:** Lect. Celal Altıntaş		
Time	**Title of Study**	**Authors**	**Corresponding Author**	**Presenter**
15:00 - 15:15	REALIZATION OF A HYBRID WHEELCHAIR KIT	Tayfun Unuk, Erkan Yüce	Erkan Yüce	Tayfun Unuk
15:15 - 15:30	AN INVESTIGATION OF MACHINE LEARNING ALGORITHMS FOR MICROWAVE BREAST CANCER DETECTION AND LOCALIZATION	Elif Tölük, Birol Aslanyürek	Elif Tölük	Elif Tölük
15:30 - 15:45	THE RELATION BETWEEN INRUSH CURRENT AND CAPACITANCE VALUE IN AUTOMOTIVE ELECTRONICS	İlayda Taylan, Ahmet Gökhan Gürbüzer, Ömer Acar	İlayda Taylan	İlayda Taylan
15:45 - 16:00	FPGA-BASED RANDOM RADIOACTIVE SOURCE SIGNAL GENERATOR	Aydın Tarık Zengin, Kevser Nur Çoğalmış	Aydın Tarık Zengin	Aydın Tarık Zengin
16:00 - 16:15	DEEP LEARNING AND CONVENTIONAL RECEIVER DESIGN FOR NOMA OFDM SYSTEMS	Rasheed Alqawi, Didem Türeli	Rasheed Alqawi	Rasheed Alqawi
16:15 - 16:30	INVESTIGATION OF THE METHODS USED IN CONVERTING MOTOR SIGNALS TO IMAGE FORMAT TO BE USED FOR FAULT DETECTION IN PMSM	Mustafa Eker, Binnaz Gündoğan, Özkan İnik	Mustafa Eker	Binnaz Gündoğan
Break				
Session 6				
Hall Name: BILMES EN 2021		**Meeting Hall Chairman :** Lect. Tolga Yücehan **Meeting Hall Vice-Chairman:** Lect. Celal Altıntaş		
Time	**Title of Study**	**Authors**	**Corresponding Author**	**Presenter**
17:00 - 17:15	EFFECT OF GRAPHENE ADDITION AND HEAT TREATMENT ON MICROSTRUCTURE AND TRIBOLOGICAL PROPERTIES OF NI-P ELECTROLESS COATING	Fahrettin Öztürk, Ramazan Karslıoğlu, Hatice Gündüz	Hatice Gündüz	Hatice Gündüz
17:15 - 17:30	APPLICATION OF LIQUID PENETRANT METHOD IN CASTING MATERIALS	Emre Görgün	Emre Görgün	Emre Görgün
17:30 - 17:45	THERMODE WELDING MACHINE MANUFACTURING WITH INDUSTRY 4.0 TECHNOLOGIES IN THE AUTOMOTIVE SECTOR	Uğur Yücel, Umut Taşkın, Samet Tükel	Uğur Yücel	Umut Taşkın
17:45 - 18:00	INVESTIGATION OF LOW-VELOCITY IMPACT BEHAVIORS OF ALUMINUM FOAM SANDWICH STRUCTURES REINFORCED WITH ALUMINUM PLATES	Noor Jasim, Recep Güneş	Noor Jasim	Noor Jasim
18:00 - 18:15	SEFARERS SELECTION CRITERIA OF SHIPPING COMPANIES A REVIEW OF LITERATURE	Tolga Arslan, Mehmet Fatih Dinçer	Tolga Arslan	Tolga Arslan
18:15 - 18:30	THE EFFECTS OF BARREL MATERIAL ON MUZZLE VELOCITY AT DIFFERENT CARTRIDGE PRESSURES IN SPORTING RIFLES	Abdullah Uğur, Rıfat Yakut, Hayrettin Düzcükoğlu, Ömer Sinan Şahin	Rıfat Yakut	Rıfat Yakut
26 December 2021 - Sunday				
Session 7				
Hall Name: BILMES EN 2021		**Meeting Hall Chairman :** Lect. Tolga Yücehan **Meeting Hall Vice-Chairman:** Lect. Celal Altıntaş		
Time	**Title of Study**	**Authors**	**Corresponding Author**	**Presenter**
09:00 - 09:15	A DIGITAL ANALYTICS APPROACH BY APPLYING MACHINE LEARNING FOR THE ANALYSIS OF THEATRE AND ART MARKETING WITH MANAGERIAL IMPLICATIONS FOR CONTEMPORARY FINE ARTS EDUCATION	Özerk Yavuz	Özerk Yavuz	Özerk Yavuz

09:15 - 09:30	REVIEW ON MOTORCYCLE RIDERS BEHAVIOUR AND ROAD SAFETY FOR INTELLIGENT TRAFFIC MANAGEMENT	Raziye Betül Arslan, Özgür Karaduman, Engin Avcı	Raziye Betül Arslan	Raziye Betül Arslan
09:30 - 09:45	FRAMEWORK OF FACTORS AFFECTING ON USER EXPERIENCE WITH DISTANCE LEARNING	Abdullah Raed Al-Shaikhli ,Aslan Kanamgotov	Abdullah Raed Al-Shaikhli	Abdullah Raed Al-Shaikhli
09:45 - 10:00	EVALUATING MACHINE LEARNING METHODS FOR PREDICTION OF BUS TRAVEL TIME BETWEEN STOPS IN PUBLIC TRANSPORTATION	Faruk Serin, Yiğit Alişan	Yiğit Alişan	Yiğit Alişan
10:00 - 10:15	A MODEL FOR MEASURING THE EXTENT TO WHETHER 2D AND 3D TEXTURES CONVEY EMOTIONS	Dursun Akaslan	Dursun Akaslan	Dursun Akaslan
10:15 - 10:30	DETERMINATION THE PRIORITY OF MANAGERIAL DECISIONS USING FUZZY LOGIC	Ahmad Ali, Mohammed Wadi	Ahmad Ali	Ahmad Ali
Break				

Session 8

Hall Name: BILMES EN 2021

Meeting Hall Chairman : Lect. Tolga Yücehan
Meeting Hall Vice-Chairman: Lect. Celal Altıntaş

Time	Title of Study	Authors	Corresponding Author	Presenter
11:00 - 11:15	DEHAZING BASED LOW LIGHT IMAGE ENHANCEMENT ON ANDROID OPERATING SYSTEM	Yücel Çimtay, Gökçe Nur Yılmaz	Gökçe Nur Yılmaz	Yücel Çimtay
11:15 - 11:30	3D VIDEO QUALITY ASSESSMENT BASED ON PSNR IMPROVE	Gökçe Nur Yılmaz, Yücel Çimtay	Gökçe Nur Yılmaz	Gökçe Nur Yılmaz
11:30 - 11:45	EXAMINING THE MACHINE AND DEEP LEARNING METHODS IN THE DIAGNOSIS OF BREAST CANCER	Zainab Subhi Mahmood Hawrami, H. Hasan Örkcü	Zainab Subhi Mahmood Hawrami	Zainab Subhi Mahmood Hawrami
11:45 - 12:00	COMPARISON OF GENETIC ALGORITHM, RED FOX ALGORITHM, AND ARTIFICIAL NEURAL NETWORKS IN ETHICS COMMITTEE SELECTION	Sakine Akyol, Bayram Köse, Hanefi Özbek	Sakine Akyol	Sakine Akyol
12:00 - 12:15	A MULTI-CRITERIA DECISION-MAKING APPROACH FOR FACILITY LAYOUT DESIGN	Mehmet Şahin	Mehmet Şahin	Mehmet Şahin
12:15 - 12:30	THE INFLUENCE OF URBAN MORPHOLOGICAL CHARACTERISTICS ON REAL ESTATE VALUE: A MODEL BASED ON GIS	Rıza Ender Umur, Ebru Çubukçu	Rıza Ender Umur	Rıza Ender Umur
Break				

Session 9

Hall Name: BILMES EN 2021

Meeting Hall Chairman : Lect. Tolga Yücehan
Meeting Hall Vice-Chairman: Lect. Celal Altıntaş

Time	Title of Study	Authors	Corresponding Author	Presenter
13:00 - 13:15	AGRICULTURAL INNOVATION POTENTIAL ADOPTING POTENTIAL CASE OF BAŞYAYLA DISTRICT OF KARAMAN PROVINCE	Aysun Yener Ögür, Münevver Sena Gürbüz	Aysun Yener Ögür	Münevver Sena Gürbüz
13:15 - 13:30	FACTORS AFFECTING THE USE OF SOCIAL MEDIA FOR AGRICULTURAL PURPOSES; YARMA DISTRICT OF KONYA PROVINCE	Aysun Yener Ögür, Seda Genç, Berna Karakaya, Nur Hanım Ölmez	Aysun Yener Ögür	Aysun Yener Ögür
13:30 - 13:45	EFFECTS OF SILICON PRE-TREATMENTS TO EMERGENCE OF PURPLE AND YELLOW CORNS (ZEA MAYS INDENTATA L.)	Elif Özdemir	Elif Özdemir	Elif Özdemir
13:45 - 14:00	EFFECTS OF SILICON PRIMING TO SOME GRAIN PROPERTIES OF PURPLE AND WHITE CORNS EXPOSED TO DEFICIT IRRIGATION UNDER FIELD CONDITIONS	Elif Özdemir	Elif Özdemir	Elif Özdemir
Break				

Session 10				
Hall Name: BILMES EN 2021			**Meeting Hall Chairman :** Lect. Tolga Yücehan **Meeting Hall Vice-Chairman:** Lect. Celal Altıntaş	
Time	**Title of Study**	**Authors**	**Corresponding Author**	**Presenter**
15:00 - 15:15	INVESTIGATION OF THE EFFECTS OF WATER AND SOIL POLLUTION IN FELLUCE ON IRAQ ANBAR REGION	Osama Hameed Fahad, Hatim Elhatip	Osama Hameed Fahad	Osama Hameed Fahad
15:15 - 15:30	GEOCHEMICAL-MINERALOGICAL INVESTIGATION AND RESEARCH ON THEIR USABILITY AS INDUSTRIAL RAW MATERIALS OF SILICA SAND DEPOSITS IN THE WEST OF IRAQ	Lina Raid Fadhil Al-Shaikhly, Zeynel Başibüyük, Hasan Kattoof Jasim, Gökhan Ekincioğlu	Lina Alshaikhly	Lina Alshaikhly
15:30 - 15:45	GEOLOGY AND GEOCHEMISTRY OF THE PB-ZN MINERALIZATION OBSERVED IN THE CARBONATES IN THE NORTH OF DADAĞLI (KAHRAMANMARAŞ)	Yusuf Barbaros Akben, Cihan Yalçın, Yusuf Uras	Yusuf Barbaros Akben	Yusuf Barbaros Akben
15:45 - 16:00	BASHKIRIAN/MOSCOVIAN BOUNDARY BASED ON FUSULINID FORAMINIFERA IN HADIM NAPPE SECTIONS FROM THE TAURIDE BELT, TURKEY: A REVIEW OF BIOSTRATIGRAPHIC DATA	Melikan Akbaş	Melikan Akbaş	Melikan Akbaş
16:00 - 16:15	INVESTIGATION OF BENDING BEHAVIOR OF CANTILEVER SQUARE BEAMS WITH CUF	Munise Didem Demirbaş, Erasmo Carrera	Munise Didem Demirbaş	Munise Didem Demirbaş

DAVETLİ KONUŞMACILAR / INVITED SPEAKERS

INTEGRATED REMOTE SENSING AND GIS APPROACH FOR SPATIAL MODELING OF WATER QUALITY IN NAKIVUBO CHANNEL

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Abstract

Quality of water plays a significant role before utilization for sustainability and environmental conservation. Nakivubo channel drains about 95% of Kampala storm water, traversing highly populated slums, markets, industrial areas and wetlands to discharge at Murchison Bay. In this study, integrated remote sensing (RS) and GIS for spatial modelling of water quality along the Nakivubo channel in Kampala, Uganda was explored. Water samples were collected at 11 different stations on (November 2018) wet, and dry (February 2020) seasons, including the Lands at 8 satellite images of the same dates were generated. The in-situ measurements were statistically correlated with various L8 radiance bands to develop an alogarithm that accurately calculates and describes the relationship between water quality variables and the channel. In-situ data for both seasons were examined for pH, Colour, Turbidity, EC, COD, TSS and Coliforms. A significant change was detected in water quality parameter results between the rainy season and the dry season. The average water pH increased from 6.82 to 7.3 (-7.57%), Colour (PtCo) from 251.8 to 591.2 (-134.78%) and Turbidity (NTU) reduced from 375.2 to 73.4 (80.43%). EC (µs/cm) reduced from 1002.2 to 780.6 (22.11%), COD (mg/l) reduced from 599.6 to 398.5 (33.53%), TSS (mg/l) reduced from 348.2 to 157.3 (54.83%) and Total Coliform (CFU) increased from 1.41x105to 1.57x105 (-11.02%). Meanwhile, four spectral bands (i.e., blue, green, red, and near infrared) were used to obtain the most appropriate models from 12 different bands ratios thereby establishing an overall regression relationship i.e., Y= a+bX1+cX2+d X3+eX1 between the band radiances and the first group of in-situ data (wet season). Initial results indicate capability of the L8 sensors to estimate water parameters in Nakivubo channel accurately where the R2 values obtained based on different band ratios were 0.77, 0.69, 0.650 0.81, 0.61, 0.67 and 0.86 for pH, Colour, Turbidity, EC, COD, TSS and Coliforms, respectively. The regression models were validated with second field in-situ data and the corresponding L8 image data at the

specified survey time. The validations R^2 values of 0.51, 0.67, 0.56, 0.59, 0.61, 0.57 and 0.55 were obtained for the same water quality parameters, respectively. Regression models were applied to the study area and used to predict different water parameter values, which were then used to develop 14 different thematic maps for further Temporal and spatial variations analyses the in parameters of channel. Meanwhile, this study revealed the effectiveness of this approach in water quality parameter monitoring if applied on small water bodies such as Nakivubo channel. Therefore, if coupled with computer modelling, GIS and RS provide a solution for future water resource planning and management by water quality researchers and associated policies.

Keywords: *Nakivubo Channel, Water Quality Parameters, Remote Sensing, Satellite Data, GPS, Multi-Linear Regression Model, and Water Quality Maps*

A MULTI-REGRESSION MODEL BASED ON MONTHLY RAINFALL PROGNOSTICATION: CASE STUDY OF KASESE DISTRICT, IN EAST AFRICA

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Abstract

Forecasting of rainfall extremes is still an eminent challenge, especially in developing regions where the difficulty in prediction of these rainfall extremes is partly due to lack of advanced scientific tools and reliable data sets. The economy of Uganda being heavily dependent on agriculture becomes vulnerable due to lack of adequate irrigation facilities. In this paper a statistical approach is used over the historical data to predict the rainfall and establish its relationship to various atmospheric variables. The multiple linear regression (MLR) methodology is applied on the data collected over 9 years of Kasese district, Uganda. The model forecasts precipitation for a year considering monthly precipitation data and building model was used for years 2010-2013. The model testing and validation were performed using years 2014-2018 dataset of monthly precipitation.

The equation developed from the model thereby displayed a superb result. The model predictions showed an excellent association with the actual data. The coefficient of determination (R^2) and adjusted R^2 value was obtained to be 0.804 and 0.721 respectively. This understanding validates the application of the developed model over the study area to prognosis rainfall, thereby helping in proper planning and management.

Keywords: *Statistical Approach, Multiple Regression, Rainfall, Forecasting, Weather information, and Climate change*

INVESTIGATION AND ANALYSIS OF HEAVY METALS AND METALLOIDS IN CHARCOAL, ASH AND INSITU SOIL DURING THE SMOLDERING PROCESS OF AN EARTH KILN IN LUWERO, UGANDA

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Abstract

As we know that soil is the most important component for the construction of a traditional earth kiln for the production of charcoal in developing countries due to its simplicity in construction and operation has led to heavy metal and metalloid pollution. Loamy soil is the preferred type because of the ideal physical properties. In forensic science, heavy metal analysis in soils provides a unique fingerprint of any soil. The goal of this study is to determine if there is a correlation between charcoal production and concentrations of heavy metals in soil, characterization of charcoal, ash and soil, and by the following instrumentation: atomic absorption spectrometry (AAS) and Thermal Gravimetric Analysis (TGA). These techniques are helpful to measuring quantities of trace elements and heavy metals present in charcoal, ash and insitu soil samples. The results of metallic composites revealed that Cd (4.8mgkg), Copper (0.08) for Ash samples. Fixed carbon for the sample charcoal for all the samples stands at 36%, and this is conversely showing the energy contents of the charcoal. VOC is 41% on dry bases, in general the moisture contents for the charcoal is very low (5%).

Keywords: *Smoldering combustion, Bio-fuel- Charcoal, Heavy metal, TGA, Fixed Carbon-Energy*

DETERMINATION OF THE EFFECT OF OZONE TREATMENT ON PANELIST'S SENSORY EVALUATION AND PREFERENCE OF TREATED BROILER'S MEAT

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Abstract

Poultry meat is highly vulnerable to pathogens as well as it is very sensitive to contamination during processing. Therefore, in order to provide a safe product to the consumer, these meats must be sterilized. Chlorine and its compounds are considered one of the most effective sterilizers used in poultry processing factories, and due to the dangers of chlorine residues in poultry meat, food industry researchers have worked to develop alternative sterilization methods that are more efficient, safer for consumers and the environment, and do not threaten the meat's organoleptic qualities. This study aimed to evaluate the quality characteristics of broiler carcasses untreated and treated with ozonated water (0.5 ppm / 30 minutes) at 4 °C, and cooking for 30 minutes. A total of 16 chicken carcass samples were obtained at random from different parts of Baghdad province. An ozone generator (A_2Z/AQUA-6, USA) was used to produce ozone, CHE-Mets®-Kit, USA, was used to assess its concentration (ppm) in water. Ozone treated carcasses revealed an enhancement in the cooked carcass quality including carcass skin color, taste and consumer preference as compared to non-ozonated water treatment. These results suggested that ozone treatment could be used as the foundation for a new and healthy method of sanitizing meat and meat products at slaughterhouses, as well as before cooking in homes and restaurants.

Keywords: *Broiler carcasses, consumer preference, ozone, sensory evaluation.*

INVESTIGATION OF BENDING BEHAVIOR OF CANTILEVER SQUARE BEAMS WITH CUF

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Abstract

In this study, the bending behavior of isotropic cantilever square beams is investigated by using Carrera Unified Formulation (CUF) formulation, different beam theories, and different numerical integration techniques. CUF theory is a class theory of structures formulated with the finite element method. This theory provides one-dimensional (beam) and two-dimensional (plate and shell) theories that go beyond classical theory (Euler, Kirchhoff, Reissner, Mindlin, Love) and uses the dense notation and expresses displacement fields. It also denotes areas of displacement on the section and along the thickness in terms of base functions of arbitrary form and order. With this dense notation, all finite element matrices and vectors are included in the elementary kernel. Thus, both the solution time is shortened and the problem can be solved with fewer degrees of freedom. In the results of this study, the stress components of the beam under the bending load are shown for different beam theories and beam elements, and accurate and time-efficient results are obtained with the CUF formulation.

Keywords*: Carrera Birleşik Formülasyonu, Kiriş teorileri, FEM, CUF.*

EXPLORING AND OPTIMIZATION CYBERSPACE THREAT FOR RESEARCH DATA CENTRES IN HIGHER INSITUTIONS

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Abstract

Investigative data remains a prime target of cyber-attacks. A Check Point report found that attacks on educational institutions are growing faster than any other industry. COVID-19 research universities, in particular, are particularly threatened by state-sponsored hacking and cybercriminals trying to sell stolen data to nation-states. The year 2020 made it clear how vulnerable (and desirable) university research data is to bad actors, noting that having properly protected research will be critical to protecting yourself from current and future attacks.

And cybersecurity threats to research universities will not stop at the end of the pandemic. Universities will continue to be repositories of invaluable personal and proprietary data, often linked to corporations and government organizations, spanning medical, military, financial and emerging technologies and more. This data will continue to be a target for nation-states looking for shortcuts to their research efforts and for bad actors hoping to profit from it.

Keywards: *COVID-19, Universities, Cybersecurity.*

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SÖZLÜ SUNUMLAR
ORAL PRESENTATION

FRAMEWORK OF FACTORS AFFECTING ON USER EXPERIENCE WITH DISTANCE LEARNING

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Abstract

Many universities and businesses are implementing distance learning systems, but this requires a thorough knowledge of the user acceptance processes. Because of the widespread lockdowns caused by the Covid-19 outbreak, universities had no choice but to go fully online. Students must be prepared for such a rapid transition in order for distance learning to be a success. Research on student readiness for e-Learning adoption, on the other hand, has only looked at proactive adoption in normal circumstances. It was for this reason that this research looked into how students' experience for sudden distance learning adoption was influenced. This study's goal is to assess the effectiveness of distance learning by identifying the factos that have an impact on student outcomes and then developing a framework for furthering the effectiveness of distance education (DL). This study's questionnaire was widely disseminated throughout Turkey and Iraq through specific website designed for this aim in order to collect data that is both comprehensive and precise. After that, spss software, the most appropriate tool for this job, analyzed all feedback

Keywords*: Distance Learning, User Experience, Evaluation*

A DIGITAL ANALYTICS APPROACH BY APPLYING MACHINE LEARNING FOR THE ANALYSIS OF THEATRE AND ART MARKETING WITH MANAGERIAL IMPLICATIONS FOR CONTEMPORARY FINE ARTS EDUCATION

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Abstract

Fine arts education constitutes an important value for the development of nations, countries and geographies. In literature it is seen that societies and nations that give importance to fine arts, other art forms with respective education programs and agendas seem to be more developed in the fierce competitive environments. It is a known fact that art forms enhance the creativity of individuals as well as developing questioning skills and empathy. Therefore cultural plans, programs and agendas handled in the cultural ministry or similar levels should always be considered as a chance for investments made for the development of individuals and society at large. Therefore enough budgets for cultural programs should be maintained. Academic and pre-university degree art programs should be designed and formed in response to the changes and developments in the contemporary art world. Graduates should also be prepared in these programs to the career paths that they want to follow in these areas. Understanding the domain of art marketing as well as implementing marketing strategies, plans, programs in every level in this context can be helpful in enlarging the arts market which means creating more jobs and employment opportunities for more actors and actresses. Qualification of these talents should also be supported with academical or non academical artistic education forms. In this study theatres located in Istanbul Municapility and theatre participation behavior has been analysed with recent machine learning trends and approaches available in data mining literature with the aim of enhancing exploratory and confimatory understanding in such domains as theater, entertainment and art marketing with the aim of providing some insights and ideas to the arts community, leaders and society at large.

***Keywords**: Fine Arts, Fine Arts Marketing, Fine Arts Education, Entertainment, Entertainment Marketing, Theater Marketing, Art Marketing, Clustering, Classification, Data Mining, Machine Learning, Quantitative Analysis, Supervised Learning, Unsupervised Learning*

ENERGY MANAGEMENT SYSTEMS FOR DATA CENTERS

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Abstract

Nowadays, the increasing use of technology brings about the continuous production of data. For that reason, the number and workload of data centers increase day by day. Ensuring the most important criteria among the data centers which are accessibility and security at the desired level brings energy consumption, and data centers are structures where energy consumption is quite high. Data centers are the highest energy-consuming segment among information and communication technologies. The continuous increase in the number of data centers also causes this energy consumption to increase day by day. The European Union has moved the zero-carbon emission target of data centers from 2050 to 2030, within the scope of preventing carbon emissions in this regard. It is predicted that the electrical energy used by data centers is 2-3% of the global electrical energy consumption and this rate is estimated to increase to 5-6% by the end of 2022. Considering this situation, the importance of the energy efficiency of data centers becomes clearer. In the ECO-Qube project, which was developed to ensure energy efficiency in data centers and supported by the EU under the H2020 program (support number 956059), energy efficiency and performance improvements will be achieved in data centers by using an Artificial-Intelligence-Augmented Cooling System. Within the scope of the project, a customized Energy Management System is being developed by Endoks Energy, where energy consumption can be monitored and controlled. With this Energy Management System, it will be possible to monitor key performance indicators, and the collected real-time data will be evaluated with the optimization algorithm to be developed within the scope of the project, and energy efficiency recommendations will be developed, and commands related to energy efficiency will be sent to the data center's building management system. The solutions to be developed within the scope of the project will be applicable for both data centers under construction and already established. Besides all, data on the energy consumption of data centers cannot be obtained today. In this respect, the project is extremely important in terms of collecting real-time data on the energy consumption of data centers. In this project, pilot field studies are carried out in 2 data centers. One of these data centers is located in Switzerland. In the data center in Switzerland, there is a building energy management system within the scope of energy management. Also, there is a system in which both renewable energy sources and energy distribution techniques are used. Maximum energy efficiency will be achieved by sending commands to the building energy management system from the "Energy Management System" developed by Endoks. Energy management systems are one of the most effective tools that can be used for energy efficiency in today's world, and the project will contribute to the energy efficiency of data centers.

***Keywords**: Energy Efficiency, Data Center, Carbon Release, Energy Management System*

VERİ MERKEZLERİ İÇİN ENERJİ YÖNETİM SİSTEMİ

Özet

Günümüzde artan teknoloji kullanımı, verinin sürekli olarak üretimini de beraberinde getirmektedir. Bu durum veri merkezlerinin sayısını ve iş yükünü her geçen gün arttırmaktadır. Veri merkezlerinde erişilebilirlik ve güvenlik en önemli kriterler arasındadır. Bu kriterlerin istenilen düzeyde sağlanması enerji tüketimini de beraberinde getirmektedir ve veri merkezleri enerji tüketiminin oldukça fazla olduğu yapılardır. Bilgi ve iletişim teknolojileri içerisinde en yüksek enerji tüketen kesimin veri merkezleri olduğu bilinmektedir. Veri merkezlerinin sayısının devamlı olarak artması da bu enerji tüketiminin gün geçtikçe artmasına sebep olmaktadır. Avrupa Birliği de bu konuda karbon salınımının önüne geçme kapsamında, veri merkezlerinin sıfır karbon salınımı hedefini 2050 yılından 2030 yılına çekmiştir. Veri merkezleri tarafından kullanılan elektrik enerjisinin, küresel elektrik enerjisi tüketiminin 2-3% kadarı olduğu ve 2022 sonunda bu oranın 5-6% ya kadar çıkacağı öngörülmektedir. Bu durum dikkate alındığında veri merkezlerinin enerji verimliliğinin önemi daha açık anlaşılır. Veri merkezlerindeki enerji verimliliğinin sağlanması için geliştirilen AB tarafından H2020 programı kapsamında desteklenen ECO-Qube projesinde (956059 destek numaralı), arıtılmış yapay zeka soğutma sistemi kullanılarak veri merkezlerinde enerji verimliliği ve performans iyileştirmeleri sağlanacaktır. Proje kapsamında Endoks Enerji, enerji tüketiminin izlenebileceği ve kontrol edilebileceği özelleştirilmiş bir Enerji Yönetim Sistemi geliştirilmektedir. Oluşturulan Enerji Yönetim Sistemi ile performans indikatörlerinin izlenmesi mümkün olacak ve toplanan gerçek zamanlı veri, proje kapsamında geliştirilecek optimizasyon algoritmasıyla değerlendirilerek, enerji verimliliği ile ilgili öneriler geliştirecek ve veri merkezinin bina yönetim sistemine enerji verimliliği ile ilgili komutlar gönderilecektir. Proje kapsamında geliştirilecek çözümler hem yapım aşamasındaki hem de halihazırda kurulu olan veri merkezleri için uygulanabilir nitelikte olacaktır. Ayrıca günümüzde veri merkezlerinin enerji tüketimleri hakkında bir veri elde edilememektedir. Bu kapsamda proje, veri merkezlerinin enerji tüketimi ile ilgili gerçek zamanlı veri toplanması açısından da son derece önemli olmaktadır. Proje kapsamında 2 adet veri merkezinde pilot saha çalışmaları sürdürülmektedir. Bu veri merkezlerinden biri İsviçre de bulunmaktadır. İsviçre de bulunan veri merkezinde enerji yönetimi kapsamında bina enerji Yönetim sistemi mevcuttur. Ayrıca hem yenilenebilir enerji kaynaklarının hem de enerji dağıtım tekniklerinin kullanıldığı bir sistem vardır. Endoks tarafından geliştirilen Enerji Yönetim Sisteminden bina enerji yönetim sistemine komutlar göndererek maksimum enerji verimliliği sağlanabilecektir. Enerji yönetim sistemleri günümüzde enerji verimliliği için kullanılabilecek en etkin araçlardan biridir ve proje kapsamında da veri merkezlerinin enerji verimliliğinin sağlanmasına katkı sağlanmış olacaktır.

Anahtar Kelimeler*: Enerji Verimliliği, Veri merkezi, Karbon salınımı, Enerji Yönetim Sistemi*

70 KG END CARRYING CAPACITY CARTESIAN ROBOT DESIGN

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Abstract

In this study, a cartesian robotic system was designed to save manpower and increase efficiency and ergonomics, instead of manually loading to the rounding press, which require repetitive stacking the disc raw material products weighing 70 kg, in my working company.

The system consists of three parts: two-axis motion-controlled robot arms, a special purpose gripper and a product centering platform. Within the scope of the study, mechanical and control system designs were completed. In the design phase, an experiment was designed by using the Minitab statistical data analysis program for determining the effective factors. Autodesk Inventor, Nastran CAD programs and engineering tools were used for computer aided design in the mechanical design process. In addition, the static analyzes were tested by making production trials in the company workshop. The designed system can also be adapted as an unloading system. As a result, there will be a decrease in labor costs and the number of work accidents, and an increase in production numbers. When the costs of the loading and unloading system and the earnings returns of the factors are calculated, the investment can be amortized within 1 year. Annual earnings return will be an average of 2.500.000 USD.

The aim of the study, transforming theory and engineering knowledge into practice, finding solutions for some problems in my working company and contributing scientific studies.

Keywords: *Cartesian robots, mechanical modeling, cost gains*

AUTOMATED LOW VOLTAGE GRID TECHNICAL ANALYSIS PLATFORM

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Abstract

Electrical energy is one of the most important needs of today's world. Furthermore, it is used extensively by both individual users and industrial and production establishments. In order to provide quality and uninterrupted energy, activities such as the installation of MV and LV lines and the operation of the grid are the main responsibilities of electricity distribution companies. Although, MV lines are monitored more intensely by distribution companies due to their lower costs, the energy they carry and their number, most of the consumers receive energy from LV level and most of the new energy demands are made with LV level content. Also, it is important to monitor the current situation in the LV network. Monitoring of MV level can be performed with SCADA and OSOS technologies. On the other hand, these technologies are not preferred at LV level. The main purpose of the activities to be carried out within the scope of the research is to ensure that measures are taken before problems occur in the LV grid processes. At this point, the importance of processes such as investment planning and prioritization, connection permission and determination of energy quality problems draw attention for distribution companies. After applying to the distribution company to connect a production or consumption facility to the distribution system, the permission of the distribution company about the connection point of the relevant facility and under what conditions is called the connection permission. Within the scope of the study, it is aimed to establish a platform that will work with a holistic perspective. This platform will use the data of GIS, OSOS and manual read consumer continuously. Thus, it will ensure that the energy quality problems in grid, phase imbalance, voltage drop, fill rate of the transformer and field distribution box branches and technical losses are revealed correctly. In addition, it will appear as an analysis tool that shows what kind of troubles the requesting user may cause in the grid and the investment needs in case of connecting to the grid. AG level drawings will be taken from the GIS and the load flow will be made operational within the scope of the study. In order to turn this flow into loading data, OSOS data will be taken from transformers and meter reading data will be profiled using EPİAŞ profile coefficients at a resolution to be determined within the scope of the project.. A close estimation for technical losses can be calculated by determining the load flow to be operated with the profilling performed for each time period and data such as voltage drop and loading at any point of the grid. Thus, when each meter reading data is received, these simulations will be run continuously and the system will be kept alive. In addition, connection views will be given more easily as it can be seen how the situation in the grid has changed in case a new line is

added to the existing system. The most important contribution of the system for the sector is that it can work with the data to be obtained from the LV side by using the existing systems in the LV grid instead of costly monitoring and control systems.

Keywords: *Low Voltage, Phase Imbalance, Voltage Drop, Connection Permission*

OTOMATİK AG ŞEBEKE TEKNİK ANALİZ PLATFORMU

Özet

Elektrik enerjisi günümüz dünyasının en önemli ihtiyaçlarından biridir ve hem bireysel kullanıcılar hem de sanayi ve üretim kuruluşları tarafından yoğunlukla kullanılmaktadır. Kaliteli ve kesintisiz bir enerji sunmak için OG ve AG hatların kurulumu ve şebekenin işletimi gibi faaliyetler elektrik dağıtım şirketlerinin başlıca sorumluluklarındandır. OG hatlar maliyetlerinin, taşıdığı enerjinin ve sayılarının daha az olması sebebiyle dağıtım şirketleri tarafından daha yoğun izlenmesine rağmen tüketicilerin çoğu AG seviyesinden enerji almakta ve yeni enerji taleplerinin çoğu da AG seviyesi içerikli yapılmaktadır. Bu nedenle AG şebekedeki mevcut durumun izlenmesi önem arz etmektedir. OG seviyesinin izlenmesi SCADA ve OSOS teknolojileri ile gerçekleştirilebilirken AG seviyesinde bu teknolojiler tercih edilmemektedir. Araştırma kapsamında gerçekleştirilecek faaliyetlerin temel amacı AG şebeke süreçlerinde sorunlar gerçekleşmeden önlem alınmasının sağlanmasıdır. Bu noktada dağıtım şirketleri için yatırım planlama ve önceliklendirme, bağlantı görüşü verilmesi ve enerji kalitesi sorunlarının belirlenmesi gibi süreçlerin önemine dikkat çekilmiştir. Dağıtım sistemine üretim veya tüketim tesisi bağlanması için dağıtım şirketine başvurulması sonrası dağıtım şirketinin ilgili tesisin hangi noktadan hangi şartlarda bağlanabileceği ile alakalı verdiği görüş bağlantı görüşü olarak adlandırılmaktadır. Çalışma kapsamında bütüncül bir bakış açısıyla çalışacak bir platform kurulması hedeflenmektedir. Bu platform CBS, OSOS ve manuel okunan tüketicilerin verilerini sürekli kullanarak şebekede yaşanan enerji kalitesi sorunları, faz dengesizliği, gerilim düşümü, trafo ve saha dağıtım kutusu kollarının doluluk oranları ve teknik kayıpların doğru bir şekilde ortaya konulmasını sağlayacak, aynı zamanda bağlantı görüşü gibi süreçlerde talep eden kullanıcının şebekeye bağlanması durumunda şebekede ne gibi sıkıntılar doğurabileceğini ve yatırım ihtiyaçlarını da gösteren bir analiz aracı olarak karşımıza çıkacaktır. Çalışma kapsamında AG seviyesi çizimleri CBS'den alınarak ve yük akışı çalışabilir hale getirilecektir. Bu akışın yüklenme verileri haline getirilmesi amacıyla trafolardan OSOS verileri alınacak ve sayaç okuma verileri proje kapsamında belirlenecek bir çözünürlükte EPİAŞ profil katsayıları da kullanılarak profillenecektir. Gerçekleştirilen profilleme ile her bir zaman dilimi için çalıştırılacak yük akışı ile şebekenin herhangi bir noktasındaki gerilim düşümü ve yüklenme gibi veriler belirlenerek teknik kayıplar için yakın bir tahmin hesaplanabilecektir. Böylelikle, her bir sayaç okuma verisi geldiğinde bu simulasyonlar sürekli çalıştırılarak sistem canlı tutulacak ve var olan sisteme yeni bir hat eklenmesi durumunda şebekedeki durumun nasıl değiştiği görülebileceği için bağlantı görüşleri daha kolay verilecektir. Sistemin sektör için en önemli katkısı maliyetli izleme ve kontrol sistemlerinin yerine AG şebekede mevcut sistemler kullanılarak AG tarafında elde edilecek veriler ile çalışabilecek olmasıdır.

Anahtar Kelimeler: *Alçak Gerilim, Faz dengesizliği, Gerilim düşümü, Bağlantı görüşü*

AN INVESTIGATION OF MACHINE LEARNING ALGORITHMS FOR MICROWAVE BREAST CANCER DETECTION AND LOCALIZATION

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Abstract

Breast cancer is one of the most common type of cancer among women and it can cause death if not detected early. Therefore, recently, many studies have been devoted to the early detection or localization of breast cancer in different fields. The use of electromagnetic waves is a promising technique for breast cancer detection since they are comfortable to apply, sensitive to tumors and non-ionizing at microwave frequencies. Microwave tomography is one of the most frequently used microwave breast imaging approaches and generally the entire breast is attempted to be imaged in this approach. However, in this case one should deal with an inverse scattering problem with high level of mathematical and computational complexity. To avoid these difficulties, classification algorithms can be used to detect the presence or localization of a tumor.

The purpose of this study is to present an investigation of machine learning techniques for microwave breast cancer detection and localization. To this aim, the breast is illuminated separately by single frequency time-harmonic waves through a set of transmitting antennas and the scattered field is measured with receiving antennas located in the vicinity of the breast. We use various 2D realistic numerical breast phantoms to generate the scattered field by solving the direct scattering problem via the Method of Moments. The training and testing data sets, which contain the synthetic scattered field, are obtained from specific sets of breast phantoms with and without tumors of different sizes and locations. The results show that various machine learning algorithms such as Support Vector Machine, Naïve Bayes, decision trees yield high accurate results for both detection and localization of tumors in various breast models.

***Keywords**: Microwave Breast Cancer Detection, Localization of Breast Tumors, Machine Learning, Classification*

MİKRODALGA MEME KANSERİNİN TESPİTİ VE KONUMUNUN BELİRLENMESİ İÇİN MAKİNE ÖĞRENMESİ ALGORİTMALARININ İNCELENMESİ

Özet

Meme kanseri kadınlarda en sık görülen kanser türlerinden biridir ve erken teşhis edilmediği takdirde ölüme neden olabilir. Bu nedenle son zamanlarda meme kanserinin erken teşhisi veya konumunun belirlenmesine yönelik farklı alanlarda birçok çalışma yapılmaktadır. Elektromanyetik dalgaların kullanımı, uygulanma rahatlığı, tümörlere duyarlılık ve mikrodalga frekanslarında iyonlaştırıcı olmamaları nedeniyle, meme kanseri tespiti için umut verici bir tekniktir. Mikrodalga tomografisi en sık kullanılan mikrodalga meme görüntüleme yaklaşımlarından biridir ve bu yaklaşımda genellikle tüm meme görüntülenmeye çalışılır. Bununla birlikte, bu durumda, yüksek düzeyde matematiksel ve hesaplama karmaşıklığı olan

bir ters saçılma problemi ile ilgilenmek gerekir. Bu zorluklardan kaçınmak adına, bir tümörün varlığınının tespiti veya konumunun belirlenmesi için sınıflandırma algoritmaları kullanılabilir.

Bu çalışmanın amacı, mikrodalgalar aracılığıyla meme kanserinin tespiti ve konumunun belirlenmesi için çeşitli makine öğrenmesi tekniklerinin bir araştırmasını sunmaktır. Bu yaklaşımda, meme modeli bir dizi verici anten aracılığıyla tek frekanslı zaman harmonik dalgalar ile ayrı ayrı aydınlatılır ve meme çevresinde bulunan alıcı antenler ile saçılan alan ölçülür. Çalışmada, iki boyutlu gerçekçi sayısal meme modelleri kullanılarak, moment yöntemi aracılığıyla düz saçılma problem çözülmüş ve saçılan alanlar sayısal olarak hesaplanmıştır. Farklı boyut ve konumlardaki tümörleri içeren veya tümör içermeyen meme modelleri kullanılarak sentetik olarak üretilen saçılan alanlar eğitim ve test veri setlerini oluşturmaktadır. Elde edilen sonuçlar; destek vektör makinesi, Naïve Bayes ve karar ağaçları gibi çeşitli makine öğrenmesi algoritmalarının, tümörlerin hem varlığının tespiti hem de konumlarının belirlenmesi açısından, farklı meme modelleri için yüksek doğrulukta sonuçlar verdiğini göstermektedir.

***Anahtar Kelimeler**: Mikrodalga Meme Kanseri Tespiti, Meme Tümörlerinin Konum Tespiti, Makine Öğrenmesi, Sınıflandırma*

ELASTOMER USE IN WAGON BUFFERS AND DRAW GEAR

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Abstract

In this study, elastomers, which started to replace spring steels as susta material in wagon bumpers and traction assemblies in the railway sector, were examined. The usage areas of elastomers in the railway sector, their place in the standard and calculation techniques are mentioned. Elastomers, one of the polymer material types, have been increasingly used due to their easy formability and high elasticity properties. The most common elastomer material known is rubber. Elastomers are used in wheels, soles of shoes, speaker doors, and insulation of telephone lines. Elastomers have started to be used as energy absorption elements with the increase in both elasticity and strength with the developing manufacturing technologies. Devrim niteliğinde bu değişiklik hem yatırım maliyetleri düşürmüş hem de işletme maliyetlerini düşürmüştür.

With the use of elastomers in the railway sector, new standards have been arranged and the definitions in this standard have been renewed in accordance with the elastomer. The materials used to absorb the compression load applied by the trains to each other are called buffers, and the materials used to absorb the tensile load are called traction devices. Regulations are included in the "TS EN 15551 Railway applications - Railway rolling stock - Buffers" standard as the valid standard for bumpers and "TS EN 15566 Railway applications. Railway Rolling stock. Draw gear and screw coupling" standards for draw gear and screw coupling assemblies that absorb the pulling energy of trains. In this study, in addition to the general use of elastomers in the railway sector, the application areas and types of calculation techniques in the standard are explained.

***Keywords**: Vagon, Buffer, Elastomer, Draw gear, Screw Coupling*

VAGON TAMPONLARI VE CER TERTİBATLARINDA ELASTOMER KULLANIMI

Özet

Bu çalışmada demiryolu sektöründe vagon tamponlarının ve ve cer tertibatlarının içerisinde susta malzemesi olarak yay çeliklerin yerini almaya başlayan elastomerler incelenmiştir.Elastomerlerin demiryolu sektöründeki kullanım alanları,standarttaki yerleri ve hesaplama tekniklerine değinilmiştir. Polimer malzeme türlerinden birisi olan elastomerler kolay şekillendirilebilir olması aynı zamanda yüksek elastikiyet özellikleri sayesinde kullanımı giderek artmıştır. Kauçuk malzemeler doğal elastomerler arasındadır. Elastomerler tekerleklerde ayakkabı tabanlarında hoparlör kapılarında ve telefon hatlarının yalıtımı gibi yerlerde kullanılmaktadırlar.Gelişen imalat teknolojileri ile birlikte hem elastikiyet hem de dayancın artmasıyla, enerji absorbsiyon elemanları olarak da elastomerler kullanılmaya başlanmıştır.Devrim niteliğinde bu değişiklik hem yatırım maliyetleri düşürmüş hem de işletme maliyetlerini düşürmüştür.

Son 10 yılda elastomer malzemeleri demiryolu sektöründe kullanılması ile beraber, yeni standartlar düzenlenmiş ve bu standarttaki tanımlarda elastomer malzemelere göre uyarlanmaya başlanmıştır. Trenlerin birbirlerine uyguladığı basma yükünün emilmesi için kullanılan malzemelere tampon adı verilmektedir.Tamponlar için geçerli standart olarak "TS

EN 15551 Demiryolu Uygulamaları-Demiryolu Hareketli Malzemeleri-Tamponlar" standartı ve trenlerin birbirini çekme enerjisini emen Cer Tertibatları için "TS EN 15566 Demiryolu uygulamaları- Demiryolu vagonları - Cer tertibatı ve vidalı kavrama Standartları ile düzenlemelere yer verilmiştir." Bu çalışmada elastomerlerin demiryolu sektöründeki genel kullanımlarına ilave olarak standarttaki yerleri hesaplama teknikleri uygulama alanları ve çeşitleri açıklanmıştır.

***Anahtar Kelimeler**: Vagon, Tampon, Elastomer, Cer Tertibatı*

APPLICATION OF LIQUID PENETRANT METHOD IN CASTING MATERIALS

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Abstract

The method of detecting the discontinuities on the material without damaging the material is called non-destructive testing. Penetrant liquid inspection is a very common non-destructive testing method for detecting capillary defects that are exposed to the material surface but are very difficult to detect with the human eye. Although the penetrant liquid inspection method, which is generally preferred for the inspection of welded parts, is not very common, it can also be used for non-destructive testing of cast steels, cast irons, ceramics and composite materials. Cast parts are an error-prone method as a manufacturing method. It is almost impossible to reduce the pores and discontinuities formed after manufacturing in cast parts to zero. Accepting the discontinuities after manufacturing in cast parts within certain rules and evaluating them has critical importance during operation. In this regard, it is of great importance in the inspection of cast parts with penetrant liquid. In this study, non-destructive testing methods of sand, non-pressure and low-pressure die castings and precision castings by liquid penetrant method were investigated.

Keywords*: NDT, Liquid Penetrant, Casting Materials*

DÖKÜM MALZEMERDE SIVI PENETRANT YÖNTEMİNİN UYGULANMASI

Özet

Malzemeye zarar vermeden malzeme üzerinde bulunan süreksizliklerin tesbit edilmesi yöntemine tahribatsız muayene denilmektedir. Malzeme yüzeyine açılan ancak insan gözü ile farkedilmesi çok güç olan kılcal kusurların belirlenmesinde penetrant sıvı muayenesi oldukça yaygın bir tahribatsız muayene yöntemidir. Genel olarak kaynaklı parçaların muayenesinde tercih edilen penetrant sıvı muayene yöntemi çok yaygın olmamakla beraber döküm çeliklerin, dökme demirlerin, seramiklerin ve kompozit malzemelerin tahribatsız muayenesindede kullanılabilmektedir. Döküm parçalar imalat yöntemi olarak hataya açık bir yöntemdir. Döküm parçalarda imalat sonrası oluşan gözenekleri ve süreksizleri sıfıra indirmek neredeyse imkansızdır. Döküm parçalarda imalat sonrası oluşan süreksizliklerin belirli kurallar dahilinde kabul edilmesi ve bunların değerlendirilmesi işletme sırasında kritik öneme sahiptir. Penetrant sıvı ile döküm parçaların muayeneside bu bakımdan düyük önem taşımaktadır. Bu çalışmada kum, basınçsız ve düşük basınçlı, kalıp dökümler ile hassas dökümlerin sıvı penetran yöntemi ile tahribatsız muayene usülleri araştırılmıştır.

Anahtar Kelimeler*: Tahribatsız Muayene, Sıvı Penetrant, Döküm*

EFFECT OF WELDING CURRENT ON SIMILAR AND DISSIMILAR METAL WELDING IN STAINLESS STEEL SPOT RESISTANCE WELDING

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Abstract

Stainless steels are common used in many areas due to their superior corrosion resistance. Stainless steels are divided into five according to their microstructure; austenitic, ferritic, martensitic, duplex and precipitation hardened stainless steels. The most widely used types are austenitic and ferritic stainless steels. Austenitic stainless steel types are based on AISI 304 and ferritic stainless steel types are based on AISI 430 and developed by alloying studies. One of the important production methods in obtaining industrial final products is welding. Spot resistance welding is used for welding stainless steels. In this study, similar and dissimilar welding of AISI 304 and 430 quality stainless steels were investigated. The effect of current intensity on mechanical properties and microstructure of similar and dissimilar welded joining was investigated. Three different current intensity and three different alloys were paired and welded. It is generally seen that the weld penetration increases with increasing current value.

***Keywords**: Stainless Steel, Spot Resistance Welding, Microstructure*

PASLANMAZ ÇELİK NOKTA DİRENÇ KAYNAĞINDA KAYNAK AKIMININ BENZER VE FARKLI METAL KAYNAKLARINA ETKİSİ

Özet

Üstün korozyon direnci sebebi ile birçok alanda paslanmaz çelikler yaygın olarak kullanılır. Paslanmaz çelikler mikro yapılarına göre beşe ayrılır; östenitik, ferritik, martenzitik, dubleks ve çökelti sertleşmeli paslanmaz çelikler. En yaygın kullanılan türleri ise östenitik ve ferritik paslanmaz çeliklerdir. Östenitik paslanmaz çelik türleri AISI 304, ferritik paslanmaz çelik türleri AISI 430 temel alınıp alaşımlandırma çalışmaları ile geliştirilmişlerdir. Endüstriyel nihai ürün eldesinde önemli üretim yöntemlerinden biri de kaynaktır. Paslanmaz çeliklerin kaynağında sıklıkla nokta direnç kaynağı kullanılır. Bu çalışmada AISI 304 ve 430 kalitesi paslanmaz çeliklerin benzer ve benzer olmayan kaynakları incelenmiştir. Akım şiddetinin benzer ve benzer olmayan kaynaklı birleştirmelerin mekanik özelliklere ve mikro yapıya etkisi araştırılmıştır. Üç farklı akım şiddeti ve üç farklı alaşım eşleşme kombinasyonunda kaynaklı birleştirmeler yapılmıştır. Genellikle artan akım değeri ile kaynak penetrasyonunun arttığı görülmektedir.

***Anahtar Kelimeler**: Paslanmaz Çelik, Nokta Direnç Kaynağı, Mikro Yapı*

3D VIDEO QUALITY ASSESSMENT BASED ON PSNR IMPROVEMENT

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Abstract

Forming efficient 3 Dimensional (3D) video quality prediction models can be considered as one of the most important research areas to enable enhanced multimedia services. However, there exists no standardized model in the literature to provide efficient prediction of the 3D video quality. Therefore, the quality assessment models used for 2 Dimensional (2D) videos are currently exploited for the 3D video quality prediction as well. Nevertheless, using the 2D video quality assessment models can only be in compliance with the 3D video quality prediction if and only if Human Visual System (HVS) related characteristics are taken into consideration. Considering this fact, Peak Signal to Noise Ratio (PSNR) is improved to form a 3D video quality prediction model relying on the HVS related characteristics. While forming this model, first of all, an abstraction filter is used to emphasize HVS related characteristics in different 3D videos. Then, PSNR is utilized to measure the qualities of the abstracted 3D videos. Following this, contrast and motion information values of the 3D videos are measured using devised models. Moreover, subjective tests are carried out to assess the depth perception of different users towards the 3D videos used in this study. At the last step of the model development, the measured contrast and motion information values are integrated with the PSNR values with the assistance of the subjective test results to devise the proposed model. In order to assess the performance of the proposed model, correlation coefficient values are computed with the original PSNR values. The results reveal that the proposed model is quite efficient to measure the depth perception of the 3D videos in comparison to the original PSNR.

Keywords: *3D video, video quality prediction, multimedia service*

PSNR'IN GELİŞTİRİLMESİNE DAYANAN 3B VİDEO KALİTE DEĞERLENDİRMESİ

Özet

Gelişmiş çoklu-ortam servisleri sağlayabilmek adına 3 Boyutlu (3B) video kalite deneyim tahmin eden objektif modellerin geliştirilmesi önemli araştırma alanlarından birisi olarak görülebilir. Fakat 3B video kalitesini verimli şekilde tahmin eden standartlaşmış bir model henüz bulunmamaktadır. Bu nedenle, 2 Boyutlu (2B) videolar için kullanılan kalite tahmin modelleri 3B videolar için de kullanılmaktadır. Lakin 2B videolar için kullanılan modellerle 3B video kalite tahmini ancak ve ancak İnsan Görsel Sistem (İGS) bağlantılı karakteristikleri ele alması ile olanaklıdır. Bunu göz önüne alarak, bir 3B video kalite tahmin modeli geliştirmek adına, Peak Signal to Noise Ratio (PSNR) İGS bağlantılı karakteristikleri kullanarak geliştirilmiştir. Bu model oluşturulurken, farklı 3B videolardaki İGS bağlantılı karakteristikleri vurgulamak adına bir özetleme filtresi kullanılmıştır. Ardından, özetlenen videoların kaliteleri PSNR ile ölçülmüştür. Bunu takiben, 3B videoların kontrast ve hareket karakteristikleri oluşturulan modellerle ölçülmüştür. Bunun yanı sıra, 3B videolara karşı

farklı izleyicilerin derinlik algısını ölçmek adına öznel testler gerçekleştirilmiştir. Model geliştirilirken son adım olarak, ölçülen kontrast ve hareket karakteristikleri öznel test sonuçlarının da yardımı ile PSNR değerleri ile bağdaştırılmıştır. Önerilen modelin performansını değerlendirmek adına orijinal PSNR değerleri ile korelasyon katsayıları hesaplanmıştır. Elde edilen sonuçlar, önerilen modelin original PSNR değerlerine kıyasla verimini göstermektedir.

Anahtar Kelimeler: *3B video, video kalite tahmini, çoklu-ortam servisleri*

DEHAZING BASED LOW LIGHT IMAGE ENHANCEMENT ON ANDROID OPERATING SYSTEM

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Abstract

Due to low lighting circumstances, images recorded in outdoor situations might be severely affected. Low dynamic range and excessive noise levels in these photos might influence the overall effectiveness of computer vision systems. Using low-light image enhancement methods to increase the visibility of an image makes computer vision algorithms more resilient in low-light circumstances. The histogram of low-light images is remarkably similar to the histogram of hazy images. As a result, haze reduction techniques can be used to improve the contrast of low-light photos. In this study, an image enhancement algorithm is proposed which is based on inverting the low-lighting imagery and applying image dehazing with atmospheric light scattering model. The implementation of the proposed algorithm is deployed on Android operating system. Results show that the proposed approach achieves 3 frame per second for 360p video on Android operating system. This real time performance is very possible to be improved by using more powerful hardwares.

Keywords*: Poor Visibility, hazy imagery, poor contrast, image inversion*

Özet

Düşük aydınlatma koşulları nedeniyle, dış ortamlarda kaydedilen görüntüler önemli ölçüde olumsuz şekilde etkilenebilmektedir. Fotoğraflardaki bu düşük dinamik aralık ve aşırı gürültü seviyeleri, bilgisayarla görme sistemlerinin genel etkinliğini de etkileyebilmektedir. Bir görüntünün görünürlüğünü artırmak için düşük ışıkta görüntü geliştirme yöntemlerini kullanmak, bilgisayarla görme algoritmalarını düşük ışık koşullarında daha esnek hale getirmektedir. Düşük ışıklı görüntülerin histogramı, sisli ve puslu görüntülerin histogramına oldukça benzemektedir. Bu nedenle, düşük ışıklı fotoğrafların karşıtlığını iyileştirmek için pus azaltma teknikleri kullanılabilir. Bu çalışmada, düşük ışıklı görüntülerin tersine çevrilmesine ve atmosferik ışık saçılım modeli ile görüntü bulanıklaştırmanın uygulanmasına dayanan bir görüntü iyileştirme algoritması önerilmiştir. Önerilen algoritmanın uygulaması Android işletim sistemi üzerinde gerçekleştirilmiştir. Sonuçlar, önerilen yaklaşımın Android işletim sisteminde 360p video için saniyede 3 çerçeve işleme hızına ulaşılabildiğini göstermektedir. Bu gerçek zamanlı performansın daha güçlü donanımlar kullanılarak iyileştirilmesi de oldukça mümkün gözükmektedir.

Anahtar Kelimeler: *Zayıf Görünürlük, puslu görüntü, zayıf kontrast, görüntünün ters çevrilmesi*

EFFECT OF GRAPHENE ADDITION AND HEAT TREATMENT ON MICROSTRUCTURE AND TRIBOLOGICAL PROPERTIES OF NI-P ELECTROLESS COATING

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Abstract

Titanium and its alloys are widely used in many industries, especially in aerospace, because it combines features such as high strength, good corrosion resistance, low density. Despite these good properties, the low wear resistance of titanium and its alloys is undesirable for engineering applications. Many surface enhancement methods are used to improve the weak tribological properties of titanium. The purpose of this study is to investigate the effects of electroless Ni-P coating and Graphene nanoparticle reinforcement on the coating process in order to improve the weak tribological properties of titanium. The effect of heat treatment is also investigated on microstructure and tribological properties. In the present study, unreinforced Ni-P coating and graphene reinforced Ni-P matrix nanocomposite coating were successfully deposited on titanium substrate. Unreinforced and nano composite layers', which are non heat treatment and heat treatment, micro structural properties are investigated with Scaning Electron Microscope (SEM), X-Ray Diffractometer (XRD) and X-Ray Photon Spectrometry (XPS). Tribological properties are also investigated by reciprocating pin on disk method. Results indicate that Graphene addition and heat treatments strongly affect the performance of the coating, improves microstructure, and tribological properties.

***Keywords**: Graphene, Nano composite, Nickel matrix coatings.*

GRAFEN İLAVESİ VE ISIL İŞLEMİN Nİ-P AKIMSIZ KAPLAMANIN MİKROYAPISI VE TRİBOLOJİK ÖZELLİKLERİ ÜZERİNE ETKİSİ

Özet

Titanyum ve alaşımları, yüksek mukavemet, iyi korozyon direnci, düşük yoğunluk gibi özellikleri bir araya getirdiği için, özellikle havacılıkta birçok endüstride yaygın olarak kullanılmaktadır. Bu iyi özelliklere rağmen titanyum ve alaşımlarının düşük aşınma direnci mühendislik uygulamaları için istenmeyen bir durumdur. Titanyumun zayıf tribolojik özelliklerini iyileştirmek için birçok yüzey iyileştirme yöntemi kullanılmaktadır. Bu çalışmanın amacı, titanyumun zayıf tribolojik özelliklerini iyileştirmek için akımsız Ni-P kaplama ve Grafen nanoparçacık takviyesinin kaplama işlemi üzerindeki etkilerini araştırmaktır. Isıl işlemin mikroyapı ve tribolojik özellikler üzerindeki etkisi de araştırılmıştır. Bu çalışmada, titanyum altlık üzerine takviyesiz Ni-P kaplama ve grafen takviyeli Ni-P matris nanokompozit

kaplama başarıyla uygulandı. Isıl işlem ve ısıl işlem olmayan takviyesiz ve nano kompozit tabakaların mikro yapısal özellikleri Taramalı Elektron Mikroskobu (SEM), X-Işınları Difraktometresi (XRD) ve X-Işınları Foton Spektrometrisi (XPS) ile incelenmiştir. Tribolojik özellikler de ileri-geri disk üzerinde pin yöntemi yöntemi ile araştırılmıştır. Sonuçlar, Grafen ilavesinin ve ısıl işlemlerin kaplamanın performansını güçlü bir şekilde etkilediğini, mikro yapıyı ve tribolojik özellikleri iyileştirdiğini göstermektedir.

***Anahtar Kelimeler**: Grafen, Nano kompozit, Nikel matrisli kaplamalar.*

GEOCHEMICAL-MINERALOGICAL INVESTIGATION AND RESEARCH ON THEIR USABILITY AS INDUSTRIAL RAW MATERIALS OF SILICA SAND DEPOSITS IN THE WEST OF IRAQ

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Abstract

The Iraqi Western Desert stratigraphy is reviwed. The oldest exposed rocks belong to the Ga'ara formation at an age of Permian and the youngest to the Zahra formation are Pliocene-Pleistocene. 32 formations are included in the exposed stratigraphic column. Moreover, 5 samples from Rutba formation were collected, This research details the chemical, physical , and mineralogical characteristics of a variety of industrial sand products. The majority of the standards pertain to high purity silica sand , which is used as a raw material in the chemical industry to make glass, silicon carbide, and soluble silicates , as well as molding sand, hydraulic fracturing sand, and filter sand. The petrographic study show that the quartz mineral represent the main component of all samples ranges between 92.7 to 94.5 % with an average 93.78% , the studied samples contain a minor percentage of feldspars and rock fragments. The average grain size of quartz grains ranged between 0.0625 mm to 0.2mm (very fine sand to medium sand).

Keywords: *Quartz, mineralogy, glass, petrography, industrial raw material*

EFFECTS OF RUNNER INLET SIZE ON PART QUALITY IN PRODUCTION OF PMMA REFLECTOR BY INJECTION MOLDING

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Abstract

Today, the use of plastic materials in the automotive industry has become indispensable. With the development of plastic technology, the superior aspects of plastic materials have begun to be utilized more. However, there are still some problems in the production of complex or large geometry products. In this respect, it is an important issue to investigate the product quality by performing simulation studies before the injection molding process. In this study, the effects of the sprue inlet size on the part quality were investigated by means of MoldFlow software for the production of the PMMA reflector, which is used as a safety part in the automotive industry, produced by the plastic injection molding. For this, without changing the product geometry, simulations were carried out with the sprue entrance of 1.2 mm, 1.4 mm and 1.6 mm and the results were examined. When the simulation results were examined, it was determined that the distortion in the product geometry was 0.68 mm and the required injection pressure was 91.69 Mpa in the simulation made with 1.2 mm sprue inlet size. It was found that when the runner inlet size is 1.4 mm, the distortion increases to 1.63 mm and the required injection pressure is 89.03 Mpa. Finally, in the simulation made with a 1.6 mm sprue inlet, it was observed that the distortion increased more to 2.57 mm and the pressure needed for injection decreased to 86.48 Mpa. According to these data, it was determined that as the sprue inlet size increases, the injection pressure decreases, but the distortion in the product geometry increases.

***Keywords**: Injection Molding, Injection Pressure, Warpage, Runner Gate, Moldflow*

ENJEKSİYON KALIPLAMA İLE PMMA REFLEKTÖR ÜRETİMİNDE YOLLUK GİRİŞ BOYUTUNUN PARÇA KALİTESİNE ETKİLERİ

Özet

Günümüzde, plastik malzemelerin otomotiv sektöründe kullanımı vazgeçilmez bir hal almıştır. Gelişen plastik teknolojisi ile plastik malzemelerin üstün yönlerinden daha fazla faydalanılmaya başlanmıştır. Ancak yine de karmaşık veya büyük geometrili ürünlerin üretilmesinde bazı problemler çıkmaktadır. Bu bakımdan enjeksiyon kalıplama işlemi öncesinde simülasyon çalışmaları yapılarak ürün kalitesinin araştırılması önemli bir konudur. Bu çalışmada, otomotiv sektöründe güvenlik parçası olarak kullanılan ve PMMA malzemeden üretilen reflektörün plastik enjeksiyon kalıplama yöntemiyle üretiminde yolluk giriş ölçüsünün parça kalitesi üzerine etkileri MoldFlow yazılımı aracılığı ile araştırılmıştır. Bunun için ürün geometrisi değiştirilmeden yolluk girişi 1,2 mm, 1,4 mm ve 1,6 mm olacak şekilde simülasyonlar gerçekleştirilmiş ve çıkan sonuçlar incelenmiştir. Simülasyon sonuçları incelendiğinde, 1,2 mm yolluk giriş ölçüsünde yapılan simülasyonda ürün geometrisindeki çarpılmanın 0,68 mm olduğu ve ihtiyaç duyulan enjeksiyon basıncının 91,69 Mpa olduğu

belirlenmiştir. Yolluk giriş ölçüsü 1,4 mm olduğunda, çarpılmanın 1,63 mm'ye çıktığı ve ihtiyaç duyulan enjeksiyon basıncının 89,03 Mpa olduğu bulunmuştur. 1,6 mm yolluk giriş ölçüsünde yapılan simülasyonda ise çarpılmanın daha fazla artarak 2,57 mm'ye çıktığı ve enjeksiyon için ihtiyaç duyulan basıncın 86,48 Mpa'ya düştüğü görülmüştür. Bu verilere göre, yolluk giriş kalınlığı arttıkça enjeksiyon basıncının azaldığı fakat ürün geometrisindeki çarpılmanın arttığı saptanmıştır.

***Anahtar Kelimeler**: Enjeksiyon Kalıplama, Enjeksiyon Basıncı, Çarpılma, Yolluk Girişi, Moldflow*

A MULTI-CRITERIA DECISION-MAKING APPROACH FOR FACILITY LAYOUT DESIGN

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Abstract

The facility layout problem is a crucial issue that requires special attention for businesses. A facility layout is about a company or organization locating its facilities and resources most effectively so that production can be carried out and sustained with maximum efficiency and performance. Facility layout is a long-term issue that requires a particular investment cost and significantly affects production systems' efficiency, cost, and productivity. The efficient facility design reduces material handling cost, production time, and lead time. It ultimately increases productivity and efficiency, while an improper layout results in an inefficient material handling system, bottlenecks in processes, high costs, and increased production times. Therefore, determining the most suitable layout for a facility is a critical decision-making process involving different alternatives with different characteristics. In this regard, using a scientific and systematic approach can help evaluate the available alternatives multidimensionally and thus determine the optimal alternative. The present study proposes a multi-criteria decision-making approach for determining the most suitable layout design. In this context, a criteria importance through intercriteria correlation-based a combined compromise solution approach is presented. The weights of the criteria are determined through the criteria importance through intercriteria correlation. Then, the alternative layout designs are ranked based on the combined compromise solution. The results indicate that flexibility is the most crucial criterion, and the fourth alternative is optimal.

Keywords: *CoCoSo, Facility layout design, CRITIC, MCDM*

INVESTIGATION OF LOW-VELOCITY IMPACT BEHAVIORS OF ALUMINUM FOAM SANDWICH STRUCTURES REINFORCED WITH ALUMINUM PLATES

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Abstract

In this study, the low-velocity impact behavior of sandwich structures having aluminum foam core reinforced with aluminum plates was investigated. The effects of the Al-foam core density and the impact energy on the impact response of sandwich structures were investigated experimentally.

Sandwich plates were produced by combining of Al-foams with three different densities of 0.37, 0.52, and 0.70 g/cm^3, placed between Al-6061-T6 reinforcement plates with epoxy adhesive. Low velocity impact tests were carried out for each sample at 15, 30, 45 and 60J impact energies.

The effects of the foam core density and the impact energy on the low-velocity impact behavior of the aluminum plate reinforced Al-foam core sandwich structures were examined in detail using contact force-time and energy-time graphics, and after impact permanent deformation photographs taken from the front and cross-section of the sandwich specimens.

The applied impact energies were absorbed by the sandwich plates in the form of plastic deformation. The energy absorption capability of Al-foam core sandwich plates supported by aluminum face sheets is quite high and can maintain this capability at different energy levels. For the 60J impact tests, the sandwich plate with a density of 0.37 g/cm^3 was damaged, while the sandwich plates with a core density of 0.52 and 0.70 g/cm^3 were not damaged. The absorbed energies by the sandwich plates with different Al-core densities exposed to the same impact energy are at almost the same levels. It was found that while the absorbed energies by the structures remain the same, they have different permanent deformations in their response to impact.

***Keywords**: Al-foam, Sandwich plate, Low-velocity impact, damage.*

COMPARISON OF GENETIC ALGORITHM, RED FOX ALGORITHM, AND ARTIFICIAL NEURAL NETWORKS IN ETHICS COMMITTEE SELECTION

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Abstract

All over the world, studies on living health, treatment or experimental methods, traditional and complementary medicine applications, developing biotechnology applications such as the production of new drugs, and medical device developments make this process feel the need to be evaluated ethically. All these issues are related to the situations that the living thing is exposed to, and how an attitude and behavior is developed towards its characteristics, well-being and rights. These attitudes and behaviors do not change from country to country and must have similar characteristics in all experimental environments. For this reason, in order to evaluate the experiments in terms of ethical rules, an ethics committee consisting of experts in that field should be selected. These experiments can be carried out if an ethics committee is formed and necessary permissions are obtained from this committee. This study, it is aimed to establish an ethics committee by using the Genetic Algorithm, Red Fox Algorithm, and Artificial Neural Networks. It was desired to obtain more accurate and faster results by combining Ethics and Artificial Intelligence. It has been studied on how to create an Ethics Committee that can be formed with Artificial Neural Networks and by which criteria it will be selected. While selecting the board with the Genetic Algorithm, the best result was tried to be found. It is aimed to find this result faster with the Red Fox Algorithm. For this purpose, the criteria and selection process of the selected experts will be evaluated.

***Keywords**: Ethics Committee Selection, Genethic Algortihm, Red Fox Algorithm, Artificial Neural Networks*

ETİK KURUL SEÇİMİNDE GENETİK ALGORİTMA, KIZIL TİLKİ ALGORİTMASI VE YAPAY SİNİR AĞLARININ KARŞILAŞTIRILMASI

Özet

Tüm dünyada canlı sağlığına yönelik yapılan çalışmalar, tedavi ya da deneysel yöntemler, geleneksel ve tamamlayıcı tıp uygulamaları, yeni ilaçlar üretilmesi gibi gelişen biyoteknoloji uygulamaları ve tıbbi cihaz geliştirmeleri gibi süreçlerin etik olarak değerlendirilmesi ihtiyacı doğmaktadır. Bütün bu konular canlının maruz kaldığı durumların onun özelliklerine, refahına, haklarına karşı nasıl bir tutum ve davranış geliştirildiğiyle ilgilidir. Bu tutum ve davranışlar ülkeden ülkeye değişmeyip tüm deney ortamlarında benzer özellikler taşımak zorundadır. Bu sebeple yapılan deneylerin etik kuralları açısından değerlendirilmesi için o konuda uzman kişilerden oluşan bir etik kurul seçilmesi gerekmektedir. Etik kurul oluşturulup

ve bu kuruldan gerekli izinler sağlanırsa bu deneyler gerçekleştirilebilir. Bu çalışma da Genetik Algoritma, Kızıl Tilki Algoritması ve Yapay Sinir Ağları kullanılarak etik kurulun oluşturulması amaçlanmıştır. Etik ve Yapay Zeka birleştirilerek daha doğru ve hızlı sonuçlar elde edilmek istenmiştir. Yapay Sinir Ağları ile oluşturabilecek Etik Kurulun nasıl oluşturulacağı ve hangi kriterler ile seçileceği konusu üzerine çalışılmaktadır. Genetik Algoritma ile kurul seçimi yapılırken en iyi sonuç bulunmaya çalışılmaktadır. Kızıl Tilki Algoritması ile bu sonucun daha hızlı bulunması amaçlanmaktadır. Bu amaç doğrultusunda seçilen uzmanların kriterleri ve seçim süreci değerlendirilecektir.

***Anahtar Kelimeler**: Etik Kurul Seçimi, Genetik Algoritma, Kızıl Tilki Algoritması, Yapay Sinir Ağları*

SEFARERS SELECTION CRITERIA OF SHIPPING COMPANIES; A REVIEW OF LITERATURE

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Abstract

Maritime is one of the most globalized sectors in the World. Approximately 80% of merchant boats are crewed by multinational seafarers. Seafarers from different countries spend an average 3-6 months on board a ship and this causes significant employee turnover in marine sector. In this regard, one of the most significant aspects of human resource management in shipping organizations has always been selecting the correct staff. In this direction, the aim of the study is to evaluate the factors that may be effective in the selection of seafarers by making a systematic literature review. In this paper, studies on seafarer employment in the SCOPUS database were examined and analyzed. In this context, recommendations for further studies had been given.

Keywords: *Seafarer, Seafarers Recruitment, Revies Of Literature, Content Analyses.*

DENİZCİLİK ŞİRKETLERİNDE GEMİADAMI İSTİHDAM KRİTERLERİ; LİTERATÜR TARAMASI

Özet

Denizcilik sektörü emeğin en çok küreselleştiği alanlardan birisidir. Dünya denizlerinde hizmet veren gemilerin yaklaşık %80'lik kısmı, çokuluslu gemiadamı ile donatılmaktadır. Dünyanın birçok kesiminden Gemiadamları, ortalama 3-6 aylık periyotlar için iş sözleşmeleri ile hizmet vermekte ve bu durum denizcilik sektöründe önemli oranda çalışan döngüsüne yol açmaktadır. Bu gibi sebeplerle doğru personel seçimi, denizcilik şirketleri insan kaynakları birimlerinin her zaman en önemli konularından birisi olmuştur. Bu doğrultuda, çalışmanın amacı sistematik bir literatür taraması yaparak gemiadamı seçiminde etkili olabilecek etkenleri değerlendirmektir. Bu çalışmada, SCOPUS veri tabanında yer alan ve gemiadamı istihdamına yönelik çalışmalar incelenmiş ve analizi yapılmıştır. Bu doğrultuda daha sonraki çalışmalar için önerilerde bulunulmuştur.

Anahtar Kelimeler: *Gemiadamı, Gemiadamı istihdamı, Literatür taraması, İçerik Analizi.*

GEOLOGY AND GEOCHEMISTRY OF THE PB-ZN MINERALIZATION OBSERVED IN THE CARBONATES IN THE NORTH OF DADAĞLI (KAHRAMANMARAŞ)

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Abstract

Units existing to the Arabian Plate are observed in the Dadağlı (Kahramanmaraş) district. The oldest unit in this district is the Lower-Middle Cambrian aged Çaltepe formation which consisting of dolomite and dolomitic limestone. On this unit, the Cambro-Ordovician aged Seydişehir formation, consisting of shale, siltstone, sandstone and quartzite, is situated. Upper Triassic-Lower Jurassic Küreci dolomitic limestones overlie Paleozoic units with an angular unconformity. Pb-Zn mineralizations are observed in the fault zones established within the dolomitic limestones in the north of Dadadağlı. The mineralization which observed in the form of vein is epigenetic in formation. The ore paragenesis consists of galenite, sphalerite, pyrite, cerusite, smitzonite, goethite, quartz, calcite and barite respectively. In ore microscopy studies, galena-cerusite and sphalerite-smitzonite transformations are observed. Pyrite inclusions are infrequently observed in the galenites. The pyrite-goethite transformation is rather prevalent. As a proceeding of the geochemical analyzes of 6 specimens collected from the ore zone, it was seen that Pb was in the range of 4-56% (average 29%) and Zn was in the range of 0.07-0.10% (average 0.02%) respectively. In trace element analysis, V is between 241-1307 ppm, Ag 6-59 ppm, Hg 20-415 ppm and Sr 169-776 ppm. This region is extremely close to the East Anatolian Fault (EAF). As a result of the data gathered, it should be dealt with that fault zones are competent in mineralization and that these faults may be due to the effect of the EAF.

***Keywords**: Küreci Dolomite, Epigenetic, Pb-Zn Mineralization, Dadağlı (Kahramanmaraş)*

DADAĞLI (KAHRAMANMARAŞ) KUZEYİNDEKİ KARBONATLARDA GÖZLENEN PB-ZN CEVHERLEŞMESİNİN JEOLOJİSİ VE JEOKİMYASI

Özet

Dadağlı (Kahramanmaraş) bölgesinde Arabistan levhasına ait birimler gözlenir. Bu bölgedeki en yaşlı birim dolomit ve dolomitik kireçtaşından oluşan Alt-Orta Kambriyen yaşlı Çaltepe formasyonudur. Bu birim üzerinde ise geniş yayılım sunan şeyl, silttaşı, kumtaşı ve kuvarsitten oluşan Kambro-Ordovisiyen yaşlı Seydişehir formasyonu yer almaktadır. Üst Triyas-Alt Jura yaşlı Küreci dolomitik kireçtaşları ise Paleozoyik yaşlı birimler üzerine açısal uyumsuzlukla gelir. Dadadağlı kuzeyindeki dolomitik kireçtaşları içerisinde gelişen fay zonlarında Pb-Zn cevherleşmeleri gözlenir. Damar tipi şeklinde gözlenen cevherleşme epijenetik oluşumludur. Cevher parajenezi, galenit, sfalerit, pirit, serüzit, smitzonit, götit, kuvars, kalsit ve barit minerallerinden oluşur. Cevher mikroskobisi çalışmalarında galenit-

serüzit ve sfalerit-smitzonit dönüşümleri gözlenir. Galenitler içerisinde pirit kapanımları yer yer gözlenir. Pirit-götit dönüşümü ise oldukça yaygındır. Cevher zonundan derlenen 6 adet örneğin jaokimyasal analizleri sonucunda Pb'nin % 4-56 (ortalama % 29) ve Zn'nin ise % 0.07-0.10 (ortalama % 0.02) aralıklarında olduğu belirlenmiştir. İz element analizlerinde V 241-1307 ppm, Ag 6-59 ppm, Hg 20-415 ppm ve Sr 169-776 ppm arasındadır. Bu bölge Doğu Anadolu Fayına (DAF) oldukça yakındır. Elde edilen veriler neticesinde cevherleşmede fay zonlarının etklili olduğu ve bu fayların DAF'ın etkisi ile olabileceği göz önünde bulundurulmalıdır.

***Anahtar Kelimeler**: Küreci Dolomiti, Epijenetik, Pb-Zn Cevherleşmesi, Dadağlı (Kahramanmaraş)*

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EXAMINING THE MACHINE AND DEEP LEARNING METHODS IN THE DIAGNOSIS OF BREAST CANCER

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Abstract

Breast cancer is one of the leading causes of death among women aged 20-59 worldwide, and its death rates are higher than any other form of cancer. According to the statistics of the World Health Organization for 2020, there were 2.3 million women diagnosed with breast cancer and 685,000 deaths worldwide. In Turkey, approximately 18,000 women have been diagnosed with breast cancer in the last year. Therefore, early diagnosis is one of the most important secondary prevention strategies aimed at diagnosing breast cancer in the early stages of the disease. Early detection helps improve the quality of breast cancer treatment outcomes, increase the cure rate to over 95%, reduce the death rate by up to 30%, and increase the chance of survival.

The aim of this study is to diagnose early breast cancer by classifying breast cancer tumors as benign and malignant tumors with more accurate results using modern technologies, machine learning algorithms and deep learning.

Machine learning and classification algorithms are powerful tools and techniques to accomplish this task. Deep learning is a method used in computer science to classify and detect different types of cancer at an early stage. Deep learning techniques have long been used to treat breast cancer tumors and other malignancies.

The "Breast Cancer Wisconsin UCI" dataset was used in this study. The dataset consists of 569 samples and includes 32 features. The data set consists of 357 benign and 212 malignant patient groups. 85% of the data set consisting of 569 samples was used for training and 15% for testing.

Logistic Regression, Support vector machines, k nearest neighbor algorithm, Naïve Bayes, Stochastic gradient descent, decision trees, random forest classification, artificial neural networks methods were applied to the data set. The results of the classification algorithms applied to the data set were evaluated with the performance criteria of Accuracy, Precision, Sensitivity, F1 Score, Specificity, Log - Loss, AUC. Analyzes were made with Python program and support was received from Numpy, Pandas, Seaborn, Metrics and Matplotlib libraries. Python's popularity in machine learning is one of the reasons this language is used.

According to the results obtained using the holdout method, the artificial neural network (ANN) algorithm was the most successful method in the classification of data with an accuracy rate of 98.83%. This was followed by logistic regression and Stochastic Gradient Descend (SGD) with 97.67%. According to the results obtained using the k-fold cross validation method, the Random Forest algorithm has 100% accuracy. The Support Vector Machine followed the random forest algorithm with a rate of 98.21%.

***Keywords**: Breast Cancer, machine learning, deep learning.*

MEME KANSERİ TANISINDA MAKİNE VE DERİN ÖĞRENME YÖNTEMLERİNİN İNCELENMESİ

Özet

Meme kanseri, dünya genelinde 20-59 yaş arası kadınlar arasında önde gelen ölüm nedenlerinden biridir ve ölüm oranları diğer kanser türlerinden daha yüksektir. Dünya Sağlık Örgütü'nün 2020 yılı istatistiklerine göre, dünya genelinde meme kanseri teşhisi konan 2.3 milyon kadın ve 685 000 ölüm olmuştur. Türkiye'de son bir yıl içinde yaklaşık 18.000 kadına meme kanseri teşhisi konmuştur. Bu nedenle erken tanı, meme kanserini hastalığın erken evrelerinde teşhis etmeyi amaçlayan en önemli ikincil korunma stratejilerinden biridir. Erken teşhis, meme kanseri tedavi sonuçlarının kalitesini iyileştirmeye, tedavi oranını %95'in üzerine çıkarmaya, ölüm oranını %30'a kadar düşürmeye ve hayatta kalma şansını artırmaya yardımcı olur.

Bu çalışmanın amacı, meme kanseri tümörlerini modern teknolojiler ile makine öğrenmesi algoritmaları ve derin öğrenme kullanarak daha doğru sonuçlarla iyi huylu ve kötü huylu tümörler olarak sınıflandırarak erken meme kanserini teşhis etmektir.

Makine öğrenimi ve sınıflandırma algoritmaları, bu görevi gerçekleştirmek için güçlü araçlar ve tekniklerdir. Derin öğrenme, bilgisayar bilimlerinde farklı kanser türlerini erken evrelerde sınıflandırmak ve tespit etmek için kullanılan bir yöntemdir. Derin öğrenme teknikleri, meme kanseri tümörlerini ve diğer maligniteleri tedavi etmek için uzun süredir kullanılmaktadır.

Bu çalışmada "Meme Kanseri Wisconsin UCI" veri seti kullanılmıştır. Veri seti 569 örnekten oluşmakta ve 32 özellik içermektedir. Veri seti 357 örnek iyi huylu ve 212 örnek kötü huylu hasta grubundan oluşmaktadır. 569 örnekten oluşan veri setinin %85'i eğitim için, %15'i ise test için kullanılmıştır.

Veri setine Lojistik Regresyon, Destek vektör makineleri, k en yakın komşu algoritması, Naïve Bayes, Stokastik Gradyan iniş, karar ağaçları, Rastgele Orman sınıflandırması, yapay sinir ağları yöntemleri uygulanmıştır. Veri setine uygulanan sınıflandırma algoritmalarının sonuçları Doğruluk, Kesinlik, Duyarlılık, F1 Puanı, Özgüllük, Log - Kayıp, AUC performans kriterleri ile değerlendirilmiştir. Analizler Python programı ile yapılmıştır ve Numpy, Pandas, Seaborn, Metrics ve Matplotlib kütüphanelerinden de destek alınmıştır. Python'un makine öğrenimindeki popülaritesi, bu dilin kullanılmasının nedenlerinden biridir.

Holdout yöntemi kullanarak ulaşılan sonuçlara göre, verilerin sınıflandırılmasında yapay sinir ağı (YSA) algoritması %98,83 doğruluk oranı ile en başarılı yöntem olmuştur. Bunu %97,67 ile lojistik regresyon ve Stokastik Gradyan Düşüşü (SGD) izlemiştir. k-kat çapraz doğrulama yöntemi kullanarak ulaşılan sonuçlara göre Random Forest algoritması %100 doğruluk oranına sahip olmuştur. %98,21 oranı ile Destek Vektör Makinesi rasgele orman algoritmasını izlemiştir.

Anahtar Kelimeler*: Meme Kanseri, makine öğrenimi, derin öğrenme*