

6th

World Conference on Computer Engineering



**Ayvansaray University
Istanbul, Turkey
30 October - 01 November 2020**



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ABSTRACTS BOOK

**COMENG - 2019
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**6th World Conference on Computer Engineering
(COMENG-2020)**

**Ayvansaray University
Istanbul, Turkey**

30 October – 01 November 2020

ABSTRACTS BOOK

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comeng.info@gmail.com

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KEYNOTES



Prof. Dr. Osman Adigüzel

Department of Physics, Firat University, 23169 Elazig, Turkey

Keynote Title: “Lattice Reactions and Interactions Governing Phase Transformations in Shape Memory Alloys”

Bio: Dr. Osman Adiguzel was born in 1952, Nigde, Turkey. He graduated from Department of Physics, Ankara University, Turkey in 1974 and received PhD- degree from Dicle University, Diyarbakir-Turkey in Solid State Physics with experimental studies on diffusionless phase transformations in Ti-Ta alloys in 1980. He studied at Surrey University, Guildford, UK, as a post-doctoral research scientist in 1986-1987, and his studies focused on shape memory alloys. He worked as research assistant, 1975-80, at Dicle University, Diyarbakir, Turkey. He shifted to Firat University in 1980, and became professor in 1996, and He has already been working as professor. He published over 45 papers in international and national journals, He joined over 60 conferences and symposia in international and national level with contributions of oral or poster, and He supervised 5 PhD- theses and 3 M.Sc theses.

Dr. Adiguzel served his directorate of Graduate School of Natural and Applied Sciences, Firat University in 1999-2004. He received a certificate which is being awarded to him and his experimental group in recognition of significant contribution of 2 patterns to the Powder Diffraction File – Release 2000. The ICDD (International Centre for Diffraction Data) also appreciates cooperation of his group and interest in Powder Diffraction File.

Scientific fields of Dr. Adiguzel are as follow: Martensitic phase transformations and applications to copper-based shape memory alloys, molecular dynamics simulations, alloy modeling, x-ray diffraction, and electron microscopy.



Prof. Dr. Adem KARAHOCA

Istanbul Nişantaşı University
Istanbul, Turkey

Keynote Title: “Smart Technologies and Big Data”

Abstract: Smart cities are enabler of the smart technologies to improve outcomes across every aspect of city operation to give feasible service to residents. Making cities smart can be enabled by using full potential of technology and innovation ecosystems in cities. Implementation of IoT (internet of things) devices, sensors and other methods and approaches to get data from the city operations trigger operational data size and increases the big data. To give real time decisions for the city operations, smart applications and data enabled capabilities must be supported

with big data sets. In this study, smart technologies and big data interaction was analyzed to improve city operations for providing more benefits and opportunities for city residents.

Bio: Adem Karahoca is currently a full-time professor in the Department of Computer Eng. And dean of Engineering and Architecture Faculty, Nisantasi University, Istanbul, Turkey. He received his B.Sc. degree in Mathematical Engineering from Istanbul Technical University, M.Sc. and Ph.D. degrees in Software Engineering from Istanbul University. He has published 20 IT related books in Turkish and edited 4 IT related books in English. His research interests are data mining, fuzzy systems, information systems, business intelligence, computers in education, human computer interaction and big data. His research papers have published in Expert Systems with Applications, Applied Soft Computing, Soft Computing, Neural Computing and Applications, Journal of Biomedical Informatics etc.



Assoc. Prof. Dr. Murat TEZER

Near East University
North Cyprus

Keynote Title: “Teachers’ Opinions on WEB 2.0 Tools and Use in Mathematics Teaching During the Pandemic Period”

Abstract: An important feature of successful math teachers is that they can provide a variety of activities that support students’ learning and assessment. Web 2.0 applications are known to provide a variety of tools to help produce creative activities. A Web 2.0 tool enables the student to enter data and create multimedia products using text, graphics, sound and video. The possibilities for creativity and variety are unlimited. As a standard, students are expected to demonstrate reasoning and intuition and understanding when solving math exercises. The aim of this study is to examine teachers’ opinions about WEB 2.0 tools and use in mathematics teaching in distance education during the pandemic period. As a research method, interview technique, one of the qualitative research methods, was used in this research. The working group of the research consists of 12 classroom teachers working in primary schools. Suggestions were given as a result of the findings of the research in which the semi-structured interview form was used to collect the data.

Bio: He was born in Nicosia in 1972. After completing his primary education, he completed his high school at Nicosia Turkish Lycee in the year of 1990. In the same year, he started to Hacettepe University at Ankara for BA and graduated in 1994. He completed his MA (1996) and Ph.D. (2003) at the Faculty of Arts and Sciences, Applied Mathematics and Computer Sciences Department of Eastern Mediterranean University. He gave his Ph.D. Thesis about “Cycle Decompositions and Labeling of Graphs” in 2003. Between the years 1994 and 2003, he worked as full-time instructor in the same university. Between the years in 2010-2014 he worked as a project advisor and project assistant at Yenyüzyıl Kindergarten, Karaođlanođlu Primary School, Gönyeli Primary School, amlıbel Primary School, Őehit Hüseyin Ruso Secondary School, Yeşilyurt Primary School in Northern Cyprus and Kurtuluş Lycee and under

the grant program supported by the European Union and also gave these school teachers Smart Board lessons. He gives in-service training courses (statistical software SPSS, further evaluation and assessment, and office programs) to the teachers these working in schools affiliated to the Ministry of Education.



Assoc. Prof. Dr. Nazım Kaşot

Keynote Title: “Teaching Environmental Education Through Technology”

Abstracts: It is very important to share information about the environment, to create awareness and to ensure its sustainability, to connect with and touch people. People need to know that the environment must be protected in order to survive. Addressing environmental problems and eliminating these problems can only be possible if people have environmental awareness. Various media tools and technologies can be used to spread environmental

awareness among people. Everybody knows that social media raise awareness of the public by examining environmental problems. For this reason, it can be said that the easiest way to share information about the environment is social media. Increasing environmental knowledge and awareness with technologies that can be used alongside the media has become one of the important issues of today’s world. Despite different opinions, the Covid-19 pandemic has shown that digital learning has become a part of our lives and will be used more often in the future. In this presentation, methods that will facilitate the learning of environmental issues with the help of technology will be mentioned and examples will be given.

Bio: Nazım Kaşot studied biology at the Ege University between the years 2003 and 2007. His graduation project was about the biology of stripe necked terrapin (*Mauremys rivulata*). He was ranked third in the class and the fourth of section Nazım Kaşot, Kıbrıs Adası’nda Dağılıp Gösteren Çizgili Kaplumbağa’nın (*Mauremys rivulata*) Ekolojisi ve Biyolojisi Hakkında Bir Ön Çalışma with 85/100 points. He has the master degree on Secondary Education Field Teaching at Atatürk Teacher Training Academy between the years 2010 and 2011 and then worked as a biology and science teacher at the Bekirpaşa High School, Mehmetçik Secondary School, Mağusa Vocational High School, Haspolat Vocational High School and Gazi Mağusa Türk Maarif College. He had many experiences in the field of secondary education and combined his experiences to improve the environmental education in secondary schools. He was graduated from the master program on environmental education at the Near East University in 2012. He was also graduated from his PhD program on the same area in 2016 at the same university. He is now working for University of the Mediterranean Karpasia as an associate professor. He is conducting researches especially on environmental education and biodiversity issues. He has lots of academic papers and books in the field of environmental education and biodiversity.

ABSTRACTS

MANYETİK REZONANS GÖRÜNTÜLERİNDE BEYİN TÜMÖR BÖLGELERİNİN OTOMATİK TESPİTİ

Gokalp Tulum, Istanbul Arel University

Mert Tezcan, Istanbul Arel University

Tuğrul Artuğ, Istanbul Arel University

Abstract

Amaç: Bu çalışmada beyin Manyetik Rezonans (MR) görüntülerinde tümör bölgelerini otomatik olarak tespit eden bir sistem geliştirilmesi amaçlanmıştır. **Yöntem:** MR görüntülerinde beyin tümör bölgelerinin voksel değerleri kontrast madde etkisi ile gri ve beyaz madde içerisinde yüksek değerler almakta ve uzamsal domende dairesel özellik göstermektedir. Çalışmanın başlangıcında MR çekimleri esnasında ortaya çıkan gürültü bileşenlerini temizlemek adına üç boyutlu çekirdeğe sahip bir filtre tasarlanmıştır. Gürültü bileşeni temizlenen görüntülerde ise 3'lü kümeleme yeteneğine sahip bulanık mantık tabanlı bir kümeleme algoritması kullanılmıştır. Bu sayede MR görüntüleri; boşluk, gri/beyaz bölge ve kemik yapısı/aday tümör bölgeleri olmak üzere üç bölüme ayrılıp etiketlenmiştir. Üçüncü etiket içerisinde kümelenen aday bölgelerinin, kafatasını oluşturan kemik bölgelerinden ayrılabilmesi için iki etiketi ile belirlenen gri/beyaz bölge kesişimleri belirlenip nihai tümör aday yapıları elde edilmiştir. Çalışmanın ikinci adımında elde edilen tümör aday yapıları için uzamsal ve dokusal öznitelikler çıkartılmış, elde edilen özniteliklerden ayırıcılık yeteneği yüksek olan özellikler öznitelik seçim algoritmaları kullanılarak belirlenmiştir. Ayırıcılık başarımı yüksek olan özniteliklerin sınıflandırma işlemine kullanılması adına Çok Katmanlı Algılayıcı (MLP) tabanlı yapay sinir ağı tasarlanmıştır. Veri seti rastgele olacak şekilde %70 eğitim ve %30 test olmak üzere ayrılmıştır. **Bulgular:** Çalışmada elde edilen sonuçların değerlendirilmesi adına Alıcı İşletim Karakteristik (ROC Curve) Eğrisi, Duyarlılık, Özgüllük, Toplam Doğruluk, Pozitif Yorum Gücü, Negatif Yorum Gücü parametreleri eğitim verisi için sırasıyla %94,97, %66,66, %90,24, %93,41, %72,72 olarak hesaplanmıştır. Test verileri için elde edilen sonuçlar ise sırasıyla %93,26, %55,55, %87,70, %92,38, %58,82 olarak hesaplanmıştır. **Tartışma:** Elde edilen sonuçlar incelendiğinde geliştirilen sistemin tümör bölgelerinin tespiti açısından oldukça başarılı olduğu görülmektedir. Sistemin özgüllük değerlendirmesindeki başarısının düşük olmasının nedeni hatalı pozitif aday bölgelerinin tümör olarak değerlendirilmesinden kaynaklanmaktadır. ROC eğrileri incelendiğinde hatalı pozitif aday bölgelerinin istenilen değerde tutulması durumunda %90 civarında duyarlılık başarıları elde etmek olasıdır. **Sonuçlar ve Öneriler:** Geliştirilen sistemin öne çıkan kabiliyeti tümör bölgelerinin yüksek doğruluk ile tespit edilebilmesidir. Özgüllük başarı değerlerinin artırılması adına farklı MLP mimarilerinin veya makine öğrenme algoritmalarının denenmesi gelecek çalışmalar için planlanmaktadır.

ADDRESS FOR CORRESPONDENCE: Gokalp Tulum, Istanbul Arel University

E-Mail Address: gokalptulum@arel.edu.tr

Direction Determination and Adulthood Analysis with Deep Learning

A.Kadir Tepecik, Yalova University

Husnu Yasar, Yalova University

Abstract

In this study, it is aimed to calculate the entrance and exit information to the locations where the people captured by the camera during live video streaming are determined. Tensorflow deep learning algorithm was used to determine the adulthood of these individuals for analysis and to catch them. Thus, it was wanted to calculate how often the people were present in which period of time.

ADDRESS FOR CORRESPONDENCE: **A.Kadir Tepecik**, Yalova University

E-Mail Address: atepecik@yahoo.com

A Priority Aware Routing Protocol for Emergency Mobile Ad Hoc Networks

Özgür ÖZKAYA, Yalova University

Yunus ÖZEN, Yalova University

Abdülkadir TEPECİK, Yalova University

Abstract

Nowadays wireless networks are widely used for communication in several areas. Communication between wireless devices is possible either with infrastructure or without infrastructure. In ad hoc networks, which is without infrastructure, all nodes in a network can behave as a router if needed. Mobile ad hoc networks, where the nodes can be mobile, have many applications such as military areas, environmental information tracking, health applications, disaster situations, smart vehicles, unmanned aerial vehicles and smart home applications. Major problems encountered in ad hoc networks are node mobility and limited resources. The need for data to be delivered end-to-end quickly and with the least possible packet loss also attracts the attention of researchers. In emergency scenarios, communication can be limited or not possible due to problems occurred on infrastructures. Mobile ad hoc networks can be used in this kind of situation to provide continuous communication. Devices or living beings represented by nodes in an ad hoc network has to transmit messages immediately to the destination node in an emergency scenario. In this case, some nodes may need continuous active communication. In such cases, a priority-aware method may be preferred as a solution. A node without an urgent task has to choose the least active route amongst the route alternatives to not slow down or completely block active urgent data transmission. Thus, without affecting the important nodes' communication, other nodes can also communicate with each other. The study presented in this paper proposes a new priority aware, AODV based routing protocol for mobile ad hoc networks in an emergency scenario. The proposed method has been tested using ns-3 simulation tool in various emergency scenarios and urgent flows achieve reduced end-to-end delays without causing starvation in the rest of the network.

ADDRESS FOR CORRESPONDENCE: Özgür ÖZKAYA, Yalova University

E-Mail Address: ozgur.ozkaya@yalova.edu.tr

Performance Analysis by Running the Shortest Path Algorithms on the Grand Bazaar Graph

HÜSEYİN YILMAZ, Yalova University

ABDULKADİR TEPECİK, Yalova University

MÜFİT ÇETİN, Yalova University

Abstract

The shortest path finding problems are still one of the important research areas that still remain valid today. For the shortest path finding problems, the aim is to find the shortest path between two points on a given graph or map. Many different algorithms have been developed to find the shortest path. Some of the shortest path algorithms have the ability to identify alternative routes as well as the shortest path. A Yildiz, Dijkstra and Bellman-Ford algorithms are frequently used algorithms for short path solutions. A star has an intuitive and successful performance. The Bellman-Ford algorithm is an advantage when it comes to the need for alternative nodes, even though it is bad in terms of time due to its ability to navigate all nodes. Dijkstra algorithm shows more average performance compared to the other two algorithms.

Anahtar kelimeler— Shortest path, time complexity, memory complexit, The Big-O.

ADDRESS FOR CORRESPONDENCE: HÜSEYİN YILMAZ, Yalova University

E-Mail Address: huseyin.yilmaz093@gmail.com

COMPARISON OF PERFORMANCE ANALYSIS OF THE DIKSTRA, BFS AND DFS ALGORITHMS ON THE ISTANBUL METRO LINE STATION

ABDULKADİR TEPECİK, Yalova University

Ahmet Furkan Agrak, Yalova University

Abstract

In this study, three of the algorithms that used to finding the shortest paths were investigated their performances and differences on İstanbul metro map. Dijkstra, BFS(Breadth First Search), DFS(Deep First Search) algorithms were examined their working principles and application areas. Linear, logarithmic, polynomial and exponential equations of the results were extracted and shown in the graphs. The main purpose of the study is to calculate the shortest path and to reveal the algorithm that makes it the most effective way. In these conditions, the results were showed that BFS algorithm better than others.

Keywords: Dijkstra, DFS, BFS, Algorithm performance analysis

ADDRESS FOR CORRESPONDENCE: ABDULKADİR TEPECİK, Yalova University

E-Mail Address: atepecik@yahoo.com

Estimation of House Prices with Ridge Regression Analysis

ABDULKADİR TEPECİK, Yalova University

Ersin Tanrikulu, Yalova University

Abstract

Analysis methods with Ridge regression and other regression models are statistical analysis methods used to analyze multivariate regression data. Analysis methods with Ridge regression and other regression models are statistical analysis methods used to analyze multivariate regression data. It is the purpose of the regression model prediction to find the regression line that best represents the relationship between the dependent variable and prediction variables. In multivariable cases, although there is no deviation in the least squares estimates, the variances of the estimates can be very far from their real values. Standard errors of ridge and lasso regression can be reduced by allowing some degree of bias regression estimates. In addition, ridge and basic components regression methods can be used as an alternative to the least squares method. In this article, it is aimed to determine how to solve the regression problem by using Boston house price dataset, estimate house prices by using the properties given in the dataset and the best method to use for this. Apart from location and square images, a home value is determined by various other factors. This problem was analyzed in detail and important variables in the data set were determined, and in the results obtained from our own machine learning model created to estimate the housing price, RMSE 5.63 and R2 0.63 were measured in the learning set, while RMSE 5.13 and R2 were 0.66 for the test set.

ADDRESS FOR CORRESPONDENCE: **ABDULKADİR TEPECİK**, Yalova University

E-Mail Address: atepecik@yahoo.com

Estimation of Iris Flower Species by ANN Methods using WEKA

ABDULKADİR TEPECİK, Yalova University

Ersin Tanrikulu, Yalova University

Abstract

Classification using patterns is widely used in agriculture, industry and medicine. Artificial learning methods are used to reduce the classification errors that occur when classifying with personal observation. In this study, it is aimed to classify the iris flower species with artificial neural network (ANN) and WEKA application by using sample data of widely used iris flower. ANN model with three layers, feed forward, four inputs and one output was chosen. In the training of the ANN model, 90 data were used and 60 data were used in the test. As a result of the study, low error rates were obtained between the estimated values and the actual values. Classification results of ANN and WEKA methods were compared and it was found that WEKA method produced closer estimates than ANN method.

Keywords: ANN, WEKA, pattern classification.

ADDRESS FOR CORRESPONDENCE: ABDULKADİR TEPECİK, Yalova University

E-Mail Address: atepecik@yahoo.com

Performance Analysis of Different Support Vector Machine Algorithms

ABDULKADİR TEPECİK, Yalova University

Emre Sadıkoğlu, Yalova University

Abstract

Support vector machines (SVM) are one of the methods of supervised machine learning that make the data meaningful. SVM is frequently used in classification problems. SVM, which was originally developed as a solution to classification problems, was later adapted to regression problems and named as support vector regression. SVM has demonstrated an excellent learning and classification ability and has been successfully applied to many areas. In this article, three different SVM regression algorithms, SVR, Linear SVR and Nu SVR are run on different datasets and their performance is evaluated. The fastest employee of these three algorithms was Linear SVR and the slowest employee was Nu SVR. But the fastest producing Linear SVR has also been the lowest R-square value SVM algorithm. The R-squared value of the other two algorithms was calculated very closely. The best R-squared score belongs to the Nu SVR algorithm with 0.646745867488 for 1,000 data.

Keywords: support vector machine, regression, performance, analysis, R-squared.

ADDRESS FOR CORRESPONDENCE: ABDULKADİR TEPECİK, Yalova University

E-Mail Address: atepecik@yahoo.com

Classification of Diabetes Disease by Machine Learning Methods

ABDULKADİR TEPECİK, Yalova University

Emre Sadıkođlu, Yalova University

Abstract

Diabetes disease often seen in this age is affect life of persons negatively. Early diagnosis is important for diabetes too like other diseases. From machine learning methods are benefited for facilitating detection of disease and early diagnosis. In this study, have been made classification process on 'Pima Indians Diabetes' data set that was taken from Pima Indians. k-nearest neighbor (k-NN), Logistic Regression, Linear Regression and Support Vector Machine (SVM) were used as method. With classification process was detected whether the person was a patient. Accuracy rate is 76.56% for SVM method which has the highest accuracy. Even this information in itself helps the health worker and also prevents the lack of diagnosis.

Keywords:Data Mining, k-NN, Regression, Diabetes, Machine Learning, Classification

ADDRESS FOR CORRESPONDENCE: **ABDULKADİR TEPECİK**, Yalova University

E-Mail Address: atepecik@yahoo.com

Extraction and Classification of Attributes by Image Processing from Mammogram Images

ABDULKADİR TEPECİK, Yalova University

Hüsnü Yaşar, Yalova University

Abstract

Recently, the most dangerous disease in women is breast cancer. Tumors in breast cells cause breast cancer. Images taken with the help of X ray rays are called mammograms. CAD (Computer aided diagnosis) systems are a new technology used in this field on mammogram data. In this technology, image pre-processing, reduction of noise, image enhancement, extraction of feature vectors and classification methods as the last step are used. In this study, success rates were determined and compared by using multiple classification methods on the same data.

Keywords: Image preprocessing, feature extraction, classification, Data mining

ADDRESS FOR CORRESPONDENCE: ABDULKADİR TEPECİK, Yalova University

E-Mail Address: atepecik@yahoo.com

Evaluation of Time Performance of Artificial Bee Colony and Particle Swarm Optimization Algorithms

ABDULKADİR TEPECİK, Yalova University

Engin Yaşar, Yalova University

Abstract

Recently, living beings that act as herd in nature have made positive contributions to the developments in the world of science. These developments were particularly effective in algorithms that host the optimization infrastructure. One of these algorithms, the artificial bee colony algorithm, has emerged by inspiring honey bees' clever behavior. Particle swarm optimization algorithm is an optimization algorithm developed based on the movements of flying birds in flocks. In this study, a different side of these two algorithms is mentioned. It is calculated how long they run these data by running these two algorithms with different iteration (data) numbers. The results obtained after this study are presented in the form of graphics and tables.

Keywords: Particle swarm optimization, artificial bee colony, performance measurement.

ADDRESS FOR CORRESPONDENCE: ABDULKADİR TEPECİK, Yalova University

E-Mail Address: atepecik@yahoo.com

EXTRACTION OF URBAN BUILDINGS USING COLOR IMAGE PROCESSING AND MORPHOLOGICAL OPERATIONS

Mete DURLU, Baskent University

Ozan EŐKI, Baskent University

Emre SÜMER, Baskent University

Abstract

In many geospatial applications, automated detection of buildings has become a key concern in recent years. Determination of building locations provides great benefits for numerous geospatial applications such as urban planning, disaster management, infrastructure planning, environmental monitoring. We present a practical technique for extracting the buildings from high resolution satellite images using color image segmentation and binary morphological image processing. Color image segmentation is a mid-level image processing technique that aims to partition an image into meaningful sub-regions. Morphological structures connect image's pixels and group them to improve the feature extraction performance with various operations. The proposed technique employs the well-known morphological structures such as disk, diamond and rectangle, and operations like dilation and erosion to improve the building extraction accuracy. In this approach, images in RGB space are converted into LAB color space. With the selected predefined threshold values, the segmentation of buildings in LAB color space has been performed. Then, we refine pixels in the image by deleting pixel groups under a predefined threshold count. The proposed method is implemented on 4 different selected study areas of the city of Baskent, Ankara. The 1-m spatial resolution pan-sharpened IKONOS imagery is used as the input data. The data source is generated from the fusion of the 1-m panchromatic and 4-m (RGB) bands, acquired on August 4, 2002. The performance metrics are calculated by analyzing the detected and mis-detected pixels without applying morphological postprocessing in the first place. According to this, as an average of tested study areas; overall accuracy, sensitivity and F1 values were calculated as 0.908, 0.912, 0.944, respectively. After applying morphological operations, the same metrics are computed to be 0.918, 0.937, 0.949, respectively. The results show that the determination of urban buildings can be done more successfully with the suitable combination of morphological operations using rectangular structuring element.

ADDRESS FOR CORRESPONDENCE: **Mete DURLU**, Baskent University

E-Mail Address: 21593840@mail.baskent.edu.tr