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Book of Abstracts

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PREFACE

Opportunities offered by rapidly developing information and communication technologies, trends in customer expectations and needs of organizations to be more effective and efficient has made the Digital Transformation a necessity for all businesses and organizations.

The common belief in all developing and developed countries is that “All organizations should sail with digital transformation wind instead of resisting against it.”

Digital Industry; may be defined as developing new products and business processes that will create value for organizations and their customers, and will increase the competitiveness and sustainability of the organization.

Digital Transformation is the transition process to new ways of doing business and new ways of thinking in which digital, mobile and all new technologies are tremendously used.

Digital Transformation propels all businesses and organizations to experience a transformation by making significant changes in:

- organizational vision and strategies,
- organizational structure, governance and business models,
- decision-making mechanisms,
- products and services,
- all processes within the value chain, especially in the production process,
- the experience they provide to their customers,
- the technologies and the technological infrastructure they use.

Nowadays, a lot of people is talking about digital industry and digital transformation. However, among these there are very few who talk about what they did or what they are doing for digital transformation and digital industry. Most of the speakers tell something about what they have read or what they have heard. With this conference, we aimed to give more voice to those who talks about solid implementations, success stories, good practices with regards to digital industry and digital transformation.

Participants were expected to present success stories and cases on implementations of digital industry and digital transformation. We hope, all the participants will have the chance to exchange valuable knowledge and experience that will contribute significantly to their further efforts on implementations of digital industry and digital transformation.

"**ICODIA-International Conference on Digital Industry and Engineering Applications**", the first conference organized in the field of digital industry/digital transformation in Turkiye, is a biennial scientific event, the first of which was held in 2019 with the former name **"International Symposium on Implementations of Digital Industry and Management of Digital Transformation".**

The conference is organized by InnoPark, the managing company of Konya Technology Development Zone.

InnoPark, is a technopark located in an Industral Zone in contrast to most of the technoparks located in or near university campuses. InnoPark, as being a production oriented technopark targets to contribute to digital transformation efforts of industrial companies. In this regard, the aim of the conference is to create an opportunity for interaction, sharing and discussion of worldwide ideas, success stories, good practices, cases, experiences, developments and insights on digital industry(Industry 4.0) and digital transformation. I wish the conference to be a source of inspiration and information for all of the participants in their digital transformation efforts.

We are very delighted to receive submissions from a wide range of participants, including universities, R&D Centers, industrial organizations and technology providers. I would like to express our deepest gratitude to all invited speakers, academicians, researchers and participants who contributed to the conference.

Abstracts of all orally presented papers will be published in the ICODIA Book of Abstracts. Selected articles will be recommended for publication in reputable scientific journals. All orally presented papers besides the papers selected for publication in scientific journals will be published in ICODIA Preceedings Book with the approval of the respective authors.

On behalf of the Conference Organizing Committee, I would like to extend our deepest thanks to all invited speakers and the authors without them this event would not have any value.

I would like to express our sincere and grateful thanks to partners of ICODIA: Necmettin Erbakan University, Selcuk University, Konya Technical University, KTO Karatay University, Konya Food and Agriculture University, KOP Konya Plain Regional Development Directorate , Mevlana Development Agency , Konya Chamber of Industry and Konya Organized Industrial Zone and all partners of InnoPark for supporting this valuable and unforgettable event.

I would like to thank Necmettin Erbakan University represented here by Vice Rector Professor Ali Kahraman and Necmettin Erbakan University Space and Aviation Faculty represented by Dean Professor Murat Dilmeç for hosting this years conference.

I also extend my deepest thanks to Conference Organizing Committee, Scientific Committee and last but not least to the staff of InnoPark and to all who have served in this conference.

I hope the conference to contribute a lot to the efforts on digital transformation in Türkiye and in the world.

Prof. Dr. Fatih Mehmet Botsalı
Conference Chairperson

CONFERENCE SCHEDULE

Oct – 2023

03 Tuesday

ICODIA 23'

Opening Session

Time (GMT+3)	Participation	Speaker	Presentation Title
09:30-09:45	In-person	**Prof. Dr. Fatih M. Botsalı** General Manager of InnoPark-Konya Technology Development Zone	Opening Speech
09:45-10:00	In-person	**Prof. Dr. Ali Kahraman** Vice Rector of Necmettin Erbakan University	Welcome Speech

Session 1 Invited Speakers

Chair: Prof. Dr. Fatih Mehmet Botsalı

Time (GMT+3)	Participation	Speaker	Presentation Title
10:00-10:30	In-person	**Prof. Dr. Ahmet Yazıcı** Eskişehir Osmangazi University, Computer Engineering Department, Turkey	Digital Innovation Centers in Digital Transformation / Dijital Dönüşümde Dijital İnovasyon Merkezleri
10:30-11:00	Online	**Prof. Dr. Ümit Cali** Norwegian University of Science and Technology (NTNU) Faculty of Information Technology and Electrical Engineering, Norway	Technical and Cyber Law Aspects of Digital Green Transformation / Dijitalin Teknik ve Siber Hukuk Yönleri Yeşil Dönüşüm
11:00-11:30	Online	**Asst. Prof. Dr. Keshav Kaushik** University of Petroleum and Energy Studies School of Computer Science, İndia	Common Cyberattacks in Individuals in Day-to-Day Life / Günlük Yaşamda Bireylerde Yaygın Siber Saldırılar
11:30-12:00	Online	**Dr. Hüseyin Halıcı** CEO, Halıcı Group	Dijital Dönüşüm ve Toplum 5.0 / Digital Transformation and Society 5.0
12:00-13:30		**Lunch / Öğle Yemeği**	

Session 2 Company Presentations

Chair: Prof.Dr. Sabri Koçer

Time (GMT+3)	Participation	Speaker	Presentation Title
13:30-14:00	Online	**Can Tolga Bizel** Delta Electronics	Digital Transformation of Factories / Fabrikaların Dijital Dönüşümü
14:00-14:30	Online	**Cüneyt Ergen** IT and R&D Director, Alışan Logistics	Digital Transformation in the Logistics Industry / Lojistik Sektöründe Dijital Dönüşüm
14:30-15:00	In-Person	**Erol Çıracı** General Manager, Innovation Engineering	Usege of Wireless IoT Technologies in Industry / Endüstride Kablosuz IoT Teknolojileri Kullanımı
15:00-15:15		**Coffee Break**	

Session 3 Company Presentations

Chair: Assoc. Prof. Ahmet Yazıcı

15:15-16:00	Online	**Alper Yegin** CTO, Actility	Building Massive IoT with LoRaWAN / LoRaWAN ile Nesnelerin İnternetinin Oluşturulması
16:00-16:45	Online	**Prof. Dr. Ibrahim Jawahir** Director of Institute for Sustainable Manufacturing University of Kentucky	Advancing Circular Economy with Digitally Integrated Sustainable Manufacturing / Dijital Entegre Sürdürülebilir Üretim ile Döngüsel Ekonomiyi Geliştirme
16:45-17:00	Online	Gürol Sungun Careefoursa IT Manager	
19:00-20:30		**Gala Dinner / Gala Yemeği**	

CONFERENCE SCHEDULE

Oct – 2023

04 Wednesday

ICODIA 23'

Session 4 Company Presentations

Chair: Prof.Dr. Murat Dilmeç

Time (GMT+3)	Participation	Speaker	Presentation Title
09:30-09:50	In-Person	**Murat Apakhan** IMAŞ, Deputy General Manager	R&D and Transformation in the Machinery Manufacturing Sector / Makina İmalat Sektöründe Ar-Ge ve Dönüşüm
09:50-10:10	In-Person	**Onur İlyas Yavuz** Demsay Elektronik Ar-Ge Müdürü	Current Applications in Industrial IoT / Endüstriyel IoT'de Güncel Uygulamalar
10:10-10:55	In-Person	**Murat Atlıhan** FİGES Sistem Modelleme ve Kontrol Ekip Lideri	Modeling and Predictive Maintenance of a Pump in MATLAB/SIMULINK Environment / Bir pompanın MATLAB/SIMULINK Ortamında Modellenmesi ve Kestirimci Bakımı
10:55-11:15		**Coffee Break**	

Session 5 Oral Presentations

Chair: Prof.Dr. Mehmet Akif Erişmiş

Time (GMT+3)	Participation	Authors	Presentation Title
11:15-11:30	Online	**Renu Singh, Ashlesha Gupta and Poonam Mittal.**	Decoding Blockchain: A Comprehensive Study of Fundamentals and Applications / Blockchain'in Kodunu Çözme: Temeller ve Uygulamalara İlişkin Kapsamlı Bir Çalışma.
11:30-11:45	In-Person	**Emin Yeşil, Murat Apakhan, Alperen Adalar and Kadir Öztürk.**	Particle Size Analysis Using Image Processing Methods in The Milling Industry / Değirmencilik Endüstrisinde Görüntü İşleme Yöntemlerini Kullanarak Parçacık Boyutu Analizi
11:45-12:00		**Ihsan Ozan Cansev.**	Solar Energy is the Future of Clean Energy / Güneş Enerjisi Temiz Enerjinin Geleceği.
12:00-13:00		**Lunch**	

Session 6 Oral Presentations

Chair: Prof. Dr. Fatih Mehmet Botsalı

Time (GMT+3)	Participation	Authors	Presentation Title
13:00-13:20	In-Person	**Fatih Mehmet Botsalı, Oğuzhan Aytar and Hakkı Soy**	Digital Maturity Level Self-Assessment Tool for Manufacturers SMEs / İmalatçı Kobi'ler için Dijital Olgunluk Düzeyi Özdeğerlendirme Aracı.
13:20-13:40	In-Person	**Şule Kayiran, Ali Altın, Fahri Yaşar and Oğuzhan Uz**	Comparison between Gobal Planner and TEB Local Planner and DWA Local Planner / Gobal Planner ile TEB Local Planner ve DWA Local Planner Karşılaştırması
13:40-14:00		**Aslı Uluyurt**	METU-DIC METU DIGITAL INNOVATION CENTER / ODTÜ-DİM ODTÜ Dijital İnovasyon Merkezi
14:00-14:20	Online	**Gürol Sungun and Muharrem Hilmi Aksoy**	The Role of Mobile Applications in Personal Carbon Footprint Tracking: Example of C-Mobil Carbon Footprint Module / Kişisel Karbon Ayak İzi Takibinde Mobil Uygulamaların Rolü: C-Mobil Karbon Ayak İzi Modülü Örneği
14:20-14:40	Online	**Cüneyt Ergen, Sinem Bahar,**	Freight Cost Prediction System With Machine
		Serkan Gerz, Cenk Balkan and Ahmet Feyzioğlu	Learning / Makine Öğrenmesi ile Nakliye Maliyeti Tahmin Sistemi
14:40-14:50		**Coffee Break**	

Session 7 Oral Presentations

Chair: Prof. Dr. Haydar Livatyalı

Time (GMT+3)	Participation	Authors	Presentation Title
15:00-15:20	In-Person	**Haydar Livatyalı**	Digital Technologies in Daily Life: Comparison Of USA And TÜRKİYE – 2023 / Günlük Hayatta Dijital Teknolojiler: ABD ve TÜRKİYE Karşılaştırması – 2023.
15:20-15:40		**Coffee Break**	
15:40-16:00	In-Person	**Engin Eşme, Muhammed Arif Şen and Halil Çimen**	The Classification of Agricultural Crop Images Using Different Deep Learning Methods / Tarımsal Ürün Görüntülerinin Farklı Derin Öğrenme Yöntemleri Kullanılarak Sınıflandırılması.
16:00-16:20	In-Person	**Ersin Kaya, Sait Ali Uymaz, Vahit Tongur, Ahmet Bardiz, Serkan Gerz and Erhan Hayta**	Clustering Algorithms in Supplier Segmentation: Logistics Applications / Tedarikçi Segmentasyonunda Kümeleme Algoritmaları: Lojistik Uygulamaları
16:20-16:40	In-Person	**Haydar Livatyalı and James R. Caudill**	Solid-State vs. Fusion-Based Metal Additive Manufacturing Technologies / Katı Hal ve Füzyon Tabanlı Metal Eklemeli Üretim Teknolojileri
17:00-19:00		**City Tour (Mevlana Museum)**	

İÇİNDEKİLER

Decoding Blockchain: A Comprehensive Study of Fundamentals and Applications

Renu SINGH*, Ashlesha GUPTA, Poonam MITTAL

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A B S T R A C T

Blockchain technology was initially conceived as the underlying technology for cryptocurrencies. However, it has rapidly evolved into a versatile and disruptive force across different organizations. Blockchain gained popularity in 2009 when Satoshi Nakamoto implemented the first cryptocurrency based on blockchain. Blockchain is a decentralized and distributed public ledger for storing transactions securely. Blockchain technology when applied in financial domains helps in ensuring trust and transparency between the involved parties without the participation of any other intermediary agency or organization. The major objective of this research article is to present a detailed study of the fundamentals of blockchain technology, its applications and use cases. The applications considered for the study are Healthcare, the Financial domain, and the Internet of Things. Further, the challenges faced while implementing blockchain technology by practitioners are discussed. The research paper will be fruitful for researchers, practitioners, and industrialists of different backgrounds who want a quick start on blockchain technology.

K E Y W O R D S

- Blockchain
- DeFi
- Healthcare
- Finance
- Internet of Things
- Security

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GÜNEŞ ENERJİSİ TEMİZ ENERJİNİN GELECEĞİ

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Selçuklu/Konya

ÖZET

Günümüzde enerji üretimi ve çevre koruma adına önemli bir konu haline gelen bu yenilenebilir teknoloji, bu iki hedefi birleştiren noktada büyük bir rol oynamaktadır. Bu makalede, güneş panellerinin nasıl çalıştığını, avantajlarını ve gelecekteki potansiyelini inceleyeceğiz. Güneş enerjisi, güneş ışığını elektriğe dönüştüren solar hücrelerin birleşmesi ile oluşan güneş panelleri aracılığıyla elde edilir. Bu paneller, fotovoltaik hücrelerden oluşur ve güneş ışığını alıp elektrik enerjisine dönüştürürler. Bu süreç, fosil yakıtlara dayalı enerji üretimine göre çok daha temiz ve kesinlikle sürdürülebilir bir seçenektir. Güneş panellerinin birçok avantajı vardır. İlk olarak, çevre dostu bir enerji kaynağıdır. Güneş enerjisi üretimi sırasında zararlı emisyonlar veya hava kirliliği oluşmaz ve güneş enerjisi sınırsızdır ve dünya'da her yerde kullanılabilir. Bu teknoloji, enerji bağımsızlığını artırabilir ve enerji maliyetlerini düşürebilir ve ekonomik faydalar sunar. Uzun vadede enerji tasarrufu sağlarlar, elektrik faturalarını azaltabilirler. Ayrıca, güneş enerjisi endüstrisi, iş imkanları ve ekonomik büyümeyi teşvik edebilir.

Dünya genelinde, güneş paneli teknolojisi her dakika gelişmekte verim arttırılma odaklı çalışmaları tüm hızla sürmekte olan bir teknoloji. Gelecekte, güneş panelleri adına m^2 başına düşen watt değeri daha da geliştirilecek ve verimlilikleri artacaktır. Yenilenebilir enerji kaynaklarına olan talep arttıkça, güneş enerjisi daha fazla ev, iş yeri ve endüstri için erişilebilir hale gelecektir. Sonuç olarak, güneş panelleri temiz enerji üretiminin önemli bir parçasıdır. Firmalar ve şahıslar güneş enerjisi kullanarak çevreyi korumak ve enerji maliyetlerini düşürmek hatta tamamını karşılayıp bu işi kara dönüştürmek için çalışmalar yürütüyorlar. Gelecekte, güneş enerjisi, dünya'daki enerji üretimi adına mikenk taşı haline gelecek ve dünya'yı çok daha temiz bir yer haline getirmek adına geleceğin inşasına muhakkak katkıda bulunacaktır.

ANAHTAR KELİMELER

- Güneş Panelleri
- Enerji Verimliliği
- İnovasyon ve Güneş Enerjisi
- Temiz Enerji
- Sürdürülebilirlik
- Güneş Enerjisi Entegrasyonu
- Enerji Dönüşümü
- Güneş Enerjisi Teknolojileri

PARTICLE SIZE ANALYSIS USING IMAGE PROCESSING METHODS IN THE MILLING INDUSTRY

Emin Yeşil [a*], Murat Apakhan[a], Alperen ADALAR[b] , Kadir ÖZTÜRK[b]

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ABSTRACT

In milling, particle size distribution is an important factor in determining the quality of the final product. The size distribution of particles is analyzed at each stage of the grinding process with the help of sieves in terms of efficiency. In this study, an image-processing object detection algorithm was developed to analyze the size distribution of particles using images obtained from broken wheat and flour samples taken from milling machines. The real sizes of the objects were calculated by detecting the contours of the objects using the OpenCV, Numpy, and Scikit libraries in Python. Image preprocessing algorithms were used on the images, such as Gaussian filtering, histogram equalization, and distortion correction. It was also observed that the shadows of the objects increase as they move away from the center, which was found to mislead the contour algorithm. To overcome this situation, the distances of the particles from the center were calculated, and correction was applied to the shadow sizes. It was observed that the proposed study could be used as an alternative method to mechanical sieving for particle size analysis using image processing methods.

KEYWORDS

- Milling
- Image processing
- particle size distribution
- mechanical sieving

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GÜNLÜK HAYATTA DİJİTAL TEKNOLOJİLER: ABD TÜRKİYE KARŞILAŞTIRMASI - 2023

Haydar LIVATYALI

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Ö Z E T

Bilgisayar ve iletişim teknolojileri ülkeler arasındaki tüketim alışkanlıklarının farkını ülkelerin kalkınmışlık ve toplam milli gelirlerinden kısmen de olsa bağımsızlaştırarak kişi başına milli gelir ve kişilerin bireysel gelirlerine endeksli hale getirmiştir. Türkiye'nin büyük bir ekonomik ve siyasi değişim yaşadığı 1980 ile kıyaslandığında ABD ile tüketim alışkanlıkları arasındaki fark 2023 itibariyle çok azalmıştır. Bunun en belirgin göstergelerinden biri dijital teknolojilerin günlük hayatta işleyen süreçler ve kullanılan sistemlerdeki yeridir. 2023 yılı itibarı ile her iki ülkedeki üretim ve hizmet sektörleri ele alındığında perakende ticaretten, ulaşıma; bankacılık ve finanstan restoran ve otelcilik hizmetlerine; sağlıktan saç kesimi gibi bakım hizmetlerine, pek çok alanda ve sektörde bilgisayar ve dijital iletişim teknolojilerinin at-başı gittiği söylenilebilir. Bazı alanlarda ve iletişim hızı ile bilgi güvenliğinde ABD daha ileri gibi görünürken, tele-tıp, sağlık ve bankacılık sistemlerinin entegrasyonu gibi konularda Türkiye daha gelişmiş durumdadır. Bu bildiride farklı alan ve sektörlerde iki ülkede kullanılan yöntem ve sistemler kısaca karşılaştırılmıştır. Bilgi ve iletişim teknolojilerinin yaygınlaşması ve topluma penetrasyonunda en önemli faktörlerden birinin ülke ekonomilerinin hangi oranda kayıtlı/kayıt-dışı olduklarına bağlı olduğu değerlendirilmektedir. Sonuç olarak, her iki toplumda bazı kesimler kayıt dışı ekonomide kalmak isteseler de dijital dönüşüm toplum işlevlerinin giderek artan oranda kayıtlı hale gelmesini sağlamaktadır.

ANAHTAR KELİMELER

- Dijital dönüşüm
- Dijital toplum
- Dijital ekonomi
- Dijital tüketim

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SOLID STATE VS. FUSION BASED METAL ADDITIVE MANUFACTURING TECHNOLOGIES

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ABSTRACT

Metal additive manufacturing (M-AM) processes are still seen non-conventional in the industry, and they are considered for niche applications rather than mass production. The major determinant in the industry is the production time and unit cost. Casting, metal forming, and most machining processes are matured and optimized for low to medium cost mass production; however, a large portion of manufacturing includes customization and there are also many products that are made only one or in very small quantities, where M-AM processes may be a good alternative to conventional manufacturing. Then, understanding the strengths and weaknesses of M-AM is critical in selecting the most technically and economically feasible option. Classifying the M-AM processes as fusion-based and solid-state is important in the sense that there are significant differences in the material properties and geometric precision provided by each category. Overall, fusion-based technologies yield net-shape parts with material properties close to casting. On the other hand, solid-state processes produce "near-net-shape" geometries; however, material properties may be superior. Nevertheless, almost in all cases, some post-processing including a surface finish operation is required.

KEYWORDS

- Metal additive manufacturing
- Solid state additive manufacturing
- Fusion based additive manufacturing

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ODTÜ-DİM ODTÜ DİJİTAL İNOVASYON MERKEZİ (METU-DIC METU DIGITAL INNOVATION CENTER)

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A B S T R A C T

METU Digital Innovation Center is established on the METU Middle East Technical University campus, in Ankara in order to contribute to the establishment of an R&D ecosystem for digital transformation, increasing human resource capacity, and strengthening the communication between university -public - industry.

With this project, which will be carried out in partnership with MAKFED Turkish Machinery Federation and METU Teknokent and with the support of NGOs representing the automotive industry (TAYSAD Automotive Suppliers Association of Turkey, OTEP Automotive Technologies Platform, OSD Automotive Manufacturers Association), R&D projects for digital transformation technologies applications will be increased with the cooperation of universities and industry. This center, which will lead the digital transformation of the Turkish industry with its technical capabilities and human resources, will not only support SMEs in meeting their digital transformation needs, but will also support the policy-making activities of public institutions in this field.

K E Y W O R D S

- Digital Transformation Technologies
- Industry 4.0
- Smart Process
- Smart Product
- Smart Production System

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INTERNATIONAL CONFERENCE ON DIGITAL INDUSTRY AND ENGINEERING APPLICATONS
ICODIA 2023

THE ROLE OF MOBILE APPLICATIONS IN PERSONAL CARBON FOOTPRINT TRACKING: EXAMPLE OF C-MOBILE CARBON FOOTPRINT MODULE

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ABSTRACT

The carbon footprint measures the amount of greenhouse gas emissions of an individual, institution, or organization. This criterion calculates the amount of carbon dioxide (CO_2) and other greenhouse gases released into the atmosphere. The carbon footprint is used as a tool to measure the impact of human activities. When calculating an individual's or organization's carbon footprint, it is considered that various activities cause greenhouse gas emissions. These include many factors, such as energy consumption at home, driving, travel, food and beverage consumption, and electronic devices purchased. The importance of the carbon footprint can be seen in many ways. First, it measures the environmental impact of an individual or an organization. This measurement helps people realize and reduce the amount of greenhouse gas emissions. Second, the carbon footprint measures an organization's sustainability and environmentally friendly practices. This measurement helps an organization reduce environmental impact and create a more sustainable future. In addition, many companies and organizations are taking various steps to reduce their carbon footprints. These steps include sustainability projects, the use of renewable energy, waste reduction, and recycling activities. In this study, an application called C-MOBILE, a mobile application prepared for the tracking, analysis, and implementation of business processes of all its personnel, has been created within the body of CarrefourSA. Within the C-Mobile Carbon Footprint Module interface, multiple choice or user-input questions are first asked about human activities that cause carbon emissions. The calculation process is provided in line with the answers to these questions. The questions asked to the users during the introduction to the Carbon Footprint module have daily, weekly, and monthly periods. Calculations were made using the carbon footprint coefficient values from the literature for unit values under headings such as heating, electricity, transportation, travel, and disposable consumables. At the end of the first month when the application was used, when the individual carbon emission of the personnel was determined on C-MOBILE, a total of 25058,2 kg carbon dioxide emission was measured. The individual monthly carbon emission average was measured as 2505.8 kg carbon dioxide emission. When the data of the first week and the first month of use of the application are compared, a 6% decrease is observed in the amount of carbon emissions of all personnel using the application at the end of the month, and it has been determined that 1.621 kg less carbon is released into the atmosphere. The application primarily includes the carbon emission caused by the personnel within the company, then the comparison with the emission values in Turkey and the world, and the advisory presentation of the measures to be taken. CarrefourSA sees this practice offered to its employees as an essential step towards fulfilling our individual and corporate responsibilities towards the environment.

KEYWORDS

- Carbon Footprint
- Green Transition
- Greenhouse Gas
- Mobile Application
- C-MOBILE

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THE CLASSIFICATION OF AGRICULTURAL CROP IMAGES USING DIFFERENT DEEP LEARNING METHODS

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ABSTRACT

Deep learning for image processing and data classification which is a modern technique has a large potential for promising results. Therefore, image classification and data analyses based on deep learning have been successfully applied in agriculture. In this paper, the classification of agriculture crop images which are very similar to each other has been performed using three deep learning models, namely GoogleNet, ResNet101 and SqueezeNet. First, brief information about the dataset and used deep learning methods are described. Then, the training progress and testing progress are successfully performed. The dataset totally includes 804 images of five different types of crops such as jute, maize, rice, sugarcane and wheat. 10-fold cross validation is applied and experiments are carried out using the same samples in all models. The obtained results prove that preferred models can accurately detect and classify agriculture crop images. According to experiment results, GoogleNet has the highest accuracy with 97.50% on the test set.

KEYWORDS

- Classification
- Agricultural crop
- Deep Learning

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GOBAL PLANNER İLE TEB LOCAL PLANNER VE DWA LOCAL PLANNER KARŞILAŞTIRILMASI

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ÖZ

Bu çalışmada, gerçek dünyada diferansiyel tahrikli bir mobil robot kullanarak ROS çerçevesine ki navigasyonu kapsamında yerel planlama yaklaşımı olan TEB ve DWA arasında karşılaştırmalı bir analiz gerçekleştirilmiştir. Araştırmanın temel amacı, değişken ortamlarda daha etkili ve güvenli otonom robot navigasyon stratejilerinin geliştirilmesine katkı sağlamaktır. TEB yerel planlayıcısı, çevresindeki faktörleri sahip olduğu zaman skalasında değerlendirmesi nedeniyle, aniden ortaya çıkan engellere hızlı tepki verme yeteneği sergilemektedir. Ancak çalışma mekanizması, hız kontrollerini ortam koşullarına göre ayarlarken ani değişimler gözlenmiştir. Bu dengesizlik dönüş manevralarına da yansımış ve dar alanlarda, engellerden kaçışlarda daha geniş dönüşler gözlenmiştir. TEB, küresel planlamacıyı takip etme eğilimi göstermiş, bu da salınımlı hareketlerini arttırmıştır. DWA, bir sonraki hedef konumu bir pencere içinde anlık verilere dayanarak hesapladığı için dinamik engellerle daha kontrollü hareketler göstermiştir. Bu çalışmada, hem TEB'in hem de DWA'nın farklı koşullarda navigasyon açısından analizi yapılmıştır. Bu çalışmada otonom robotların daha güvenli bir şekilde navigasyon planlamalarını etkili bir şekilde kullanmalarına katkı sağlamayı amaçlamaktadır.

ANAHTAR KELİME

- ROS
- TED
- DWA
- Küresel planlayıcı

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İMALATÇI KOBİ'LER İÇİN DİJİTAL OLGUNLUK DÜZEYİ ÖZDEĞERLENDİRME ARACI

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ÖZET

Bu çalışmada, üretim sektöründe faaliyet gösteren KOBİ'lerin dijital olgunluk düzeyini ölçmek üzere geliştirilen ve Likert ölçeği şeklinde tasarlanmış "InnoPark Dijital Olgunluk Düzeyi Belirleme Aracı (I-DODBA)" çalışma sistematiği anlatılmıştır. Bu ölçeği kullanarak işletmesinin özdeğerlendirmesini yapan bir yönetici, dijital dönüşüme ne ölçüde ayak uydurduğunu, dijital uygulamaların işletmenin başarısına ne ölçüde katkı sağlayabildiğini, dijital dönüşüm konusundaki güçlü ve zayıf yönlerini 100 üzerinden hesaplanan puanlar ile değerlendirebilir. Bu ölçeği kullanan işletmeler, geliştirilen araçtan elde ettiği puan ile işletmesindeki dijital uygulamaların, bulunduğu ildeki ve işletmenin dahil olduğu sektördeki diğer işletmelere göre bağıl değerlendirmesini yapabilmektedir. I-DODBA bünyelerinde dijital dönüşüm sürecini başlatmak isteyen üretici KOBİ'lerin mevcut durum analizini yapabilecekleri bir araç olarak kullanılabilir. I-DODBA geliştirilirken dijital dönüşüm sürecinin stratejik yönetim mantığı ile yönetilmesi gereken bir süreç olduğu gerçeğinden hareket ederek literatürdeki özdeğerlendirme araçlarından farklı olarak tümüyle stratejik yönetim mantığını referans alarak kurgulanmıştır. Halen üretim sektöründe yaygın olarak kullanılan yönetim sistemi standartlarının tümü; Deming PDCA döngüsünü esas alan geleneksel stratejik yönetim modelini benimsemektedir. I-DODBA; üretim sektörü işletmelerinin Dijital Olgunluk Seviyelerinin tüm yönetim sistem modelleri için geçerli olan Plan-Do-Check-Act (PDCA) süreç yönetim mantığına göre belirlenmesini sağlar. Bu sayede, halen işletme bünyesinde kurulmuş olan stratejik yönetim sistemi modellerine hızlı ve etkin biçimde entegre edilebilir.

ANAHTAR KELİMELER

- Dijital Dönüşüm
- Dijital Olgunluk
- Likert Ölçeği
- Stratejik Yönetim

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FREIGHT COST PREDICTION SYSTEM WITH MACHINE LEARNING

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ABSTRACT

In today's highly competitive business landscape, harnessing the power of big data is paramount. Competition conditions are growing more challenging by the day, underscoring the need for rapid access to accurate and user-friendly data. Within the logistics and transportation sectors, freight estimation stands as a critical decision-making process. Swift data access and precise predictions have the potential to significantly boost operational efficiency. This study provides a comprehensive approach to addressing the freight estimation challenge using machine learning algorithms, with a dual objective: enhancing prediction accuracy and automating the process. To achieve these goals, the dataset is partitioned into three segments: "Training," "Validation," and "Testing," aligning with the specific requirements of working with time series data. Input variables are categorized as numerical, categorical, or mandatory, with various metrics employed for feature selection, and automatic handling of multicollinearity issues. Training involves the utilization of diverse machine learning algorithms, each accompanied by its hyperparameter sets, optimized through GridSearchCV. Model stability is reinforced with five-fold cross-validation, preventing overfitting. The champion model is selected based on the "1-MAPE" (Mean Absolute Percentage Error) value, considering differences between "training" and "validation" data to control overfitting. This selected algorithm is then deployed. Data transfer, model training, and scoring processes are executed routinely through tools like Airflow, achieving full automation. The system utilizes available data for rapid, accurate computations in point-to-point transportation operations, offering an effective solution to the freight estimation challenge and becoming an invaluable asset for logistics companies.

KEYWORDS

- Freight Prediction
- Machine Learning
- Logistic Automation
- Transportation Optimization

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CLUSTERING ALGORITHMS IN SUPPLIER SEGMENTATION: LOGISTICS APPLICATIONS

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ABSTRACT

The logistics industry has a supply chain and process structure that increases in complexity day by day. Supplier management plays a critical role in the success of logistics companies. Supplier segmentation is a way to classify and manage suppliers into specific groups or clusters. This process is critical to improving supplier performance, optimizing supply chain costs and increasing customer satisfaction. Clustering algorithms are a powerful tool used to group suppliers with similar characteristics by analysing large data sets. The use of data mining and artificial intelligence techniques can reduce costs while allowing more precise results in supplier segmentation. In this study, the importance of supplier segmentation in the logistics industry and the effect of clustering algorithms to improve this process are examined. How different clustering algorithms (K-Means, Hierarchical Clustering and SOM) are applied in supplier segmentation and what advantages these algorithms provide are analyzed from the supplier data owned by Alışan Logistics. In conclusion, this study emphasizes the importance of supplier management and segmentation for professionals and researchers in the logistics sector and shows the effect of different clustering algorithms on supplier segmentation in this process. By adopting these techniques, logistics companies can improve supplier relationships and gain competitive advantage.

KEYWORDS

- supplier segmentation
- clustering algorithms
- data mining
- artificial intelligence

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