1st International Congress on Computer Science, Engineering and Information Technology (ICSITY 2022)

ABSTRACT BOOK

29-30 SEPTEMBER 2022
WARSAW/POLAND

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1st International Computer Science, Engineering and Information Technology Congress (ICSITY 2022)

ABSTRACT BOOK

Editors

Prof. Dr. Sehl MELLOULI

Dr. Muhammed BEYATLI

Dr. Enkeleda LULAJ

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CONGRESS PROGRAM

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CONGRESS PROGRAM

With **14 papers** prepared by **31 academics/researchers** from **20 institutions** and **12 countries**.
Total Participant: 40
Presentations will be in Turkish (All Dialects), German, Arabic, English, Italian, French, Persian.
There are 2 virtual conference rooms.
The congress was organized according to Turkey time. To calculate the time for your country:
The World Clock — Worldwide
For presentations, zoom ID and links will be shared with participants before the congress

29 September 2022 Thursday 09:45-10:00	**Topic: 1st International Computer Science, Engineering and Information Technology Congress (ICSITY 2022), 29-30 September 2022** **29 September 2022 09:45 a.m. Istanbul** **Topic: ICSITY 2022** **Time: Sep 29, 2022 10:00 AM Istanbul** **Join Zoom Meeting** **https://us06web.zoom.us/j/86001789562?pwd=clFyUElDMTNuNVVncVdhSitBRko3UT09** **Meeting ID: 860 0178 9562** **Passcode: 072019**
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29 September 2022 Thursday 10:00-12:30	**Keynote Speakers** **Prof. Dr. Sehl Mellouli**, Professor and Deputy Vice-Rector Université Laval, Canada **Assoc. Prof. Arpan Kumar Kar,** Indian Institute of Technology Delhi, India **Dr. Ahmed M. Fakhrudeen,** College of Computer Science and Information Technology University of Kirkuk **Ts. Dr. Megat Al Imran Yasin,** Visiting Scholar University of Central Lancashire Preston United Kingdom **Lecturer, Engr Shamsher Khan**- University of Engineering and Technology/ Pakistan
12:30-13:00	Coffee Break- Lunch
13:00-15:00	Online Sessions
30 September 2022 Friday 10:00-12:30	Online Sessions **Topic: 1st International Computer Science, Engineering and Information Technology Congress (ICSITY 2022)** **Time: September 30, 2022 10:00 a.m. Istanbul** **Topic: ICSITY 2022 30.09.2022** **Time: Sep 30, 2022 10:00 AM Istanbul** **Join Zoom Meeting** **https://us06web.zoom.us/j/88088859663?pwd=VEZXd3RacXBBS1Q3MmNGd0pWQ0FZdz09** **Meeting ID: 880 8885 9663** **Passcode: 020782** Closing Session

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Room-I	Thursday, 29 September 2022	Moderator
	13:00-15:00	Novriest Umbu Walangara NAU
Room-II	Friday, 30 September 2022	Moderator
	10:00-12:30	Serdar DOVUSKAYA

Thursday, 29 September 2022 - Room I

Room -I	Thursday, 29 September 2022 13:00-15:00	Moderator	Novriest Umbu Walangara Nau

1. **Lilly R., Jayasurya R., B. Charith, Anoop LIGY George & Sandeep Kumar GUPTA,** Estimation of water levels in three different phases of underground tunnel construction, India
2. **Divyaranjani RAMADOSS, Dr. Sandeep Kumar GUPTA & Rishith VISHAL,** An Analysis on Ship Routing and Scheduling Problems in Liner Shipping, India
3. **Chikezie Kennedy KALU, Prof. Baozhen Dai, Olani Bekele Sakilu & Simeon Ebhota,** Novel Hybrid-Relay Cooperative Communications Technique for Agriculture, China
4. **ENGR Shamsher KHAN, Shamsher KHAN, Tanzeela SAIJAD, Sanaullah,** Minimization of Waste in Printing Sector of Pharmaceutical Industry Using Lean Manufacturing, Pakistan
5. **Prof. Dr. Sehl MELLOULI,** AI for Governments: Case Studies
6. **Hikmat HASANOV & Ismayil ZEYNALOV-** The use of satellite data in the detection of radioactive fallout on the territory of Azerbaijan, Azerbaijan
7. **Dr. Ahmed M. FAKHRUDEEN**-Towards Realization of Spectrum Sharing of Cognitive Radio Networks

Friday, 30 September 2022

Room-II

Room-II	**30 September 2022**	**Moderator**
	10:00-12:30	**Serdar DOVUSKAYA**

Friday, 30 September 2022 - Room-II

Room-II	**Friday, 30 September 2022 10:00-12:30**	**Moderator**	**Serdar DOVUSKAYA**

1. **Volkan KAYA & Ismail AKGUL,** Recognition and Classification of Vegetable Types in Agricultural Areas Using the Mobilenet Model Structure, Türkiye
2. **Hamdi AYKAS & Irem DUZDAR ARGUN,** Düzce Province Electricity Energy Demand Forecast, Türkiye
3. **Nurgül AYKAS & Irem DUZDAR ARGUN,** Düzce Province Natural Gas Demand Forecast, Türkiye
4. **Ertugrul DOGANSAHIN, Eser SERT & Muhammed YILDIRIM**, Sulfur Analysis in Apricot with Deep
5. **Ömer Galip PINAR**, Yerel Yönetimlerde Elektronik İhale (E-İhale) Süreçleri ve Yapı Bilgi Modellemesi (Bim) Entegrasyonu, Türkiye
6. **Mehmet KARAKOC**-The Importance of Discrete Mathematics Topics in the Education and Teaching of Computer Science and Engineering, Türkiye
7. **Kevser SAHINBAS**, Customer Segmentation with Data from Various Markets Using K-Means Clustering, Türkiye
8. **Megat Al Imran YASIN, Wendy JITOS &Yusuf DURACHMAN**-The Application of MySejahtera in Decision Making by the Ministry of Health, Malaysia in the Battle Against Covid-19 Pandemic

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AI for Governments: CASE STUDIES

Prof. Dr. Sehl Mellouli

Department of Information

Systems Université Laval, Canada

Introduction

- We need an Artificial Intelligence with a « citizen-centered approach to growth »
- How can AI bridge the gap between Citizens and Geovernments?
- People are more and more using social media to express their opinions about the different services that their governments are delivering.
- It becomes important for policy-makers to have the necessary tools to extract this valuable knowledge in a comprehensive way and that they may consider in their decision-making processes.

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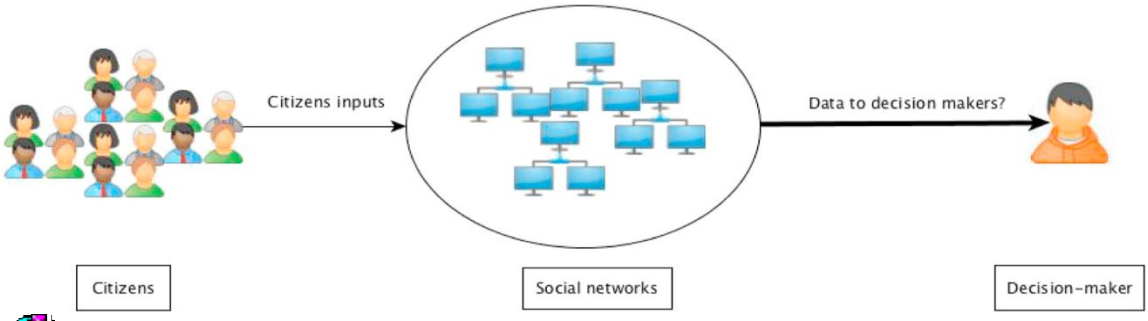

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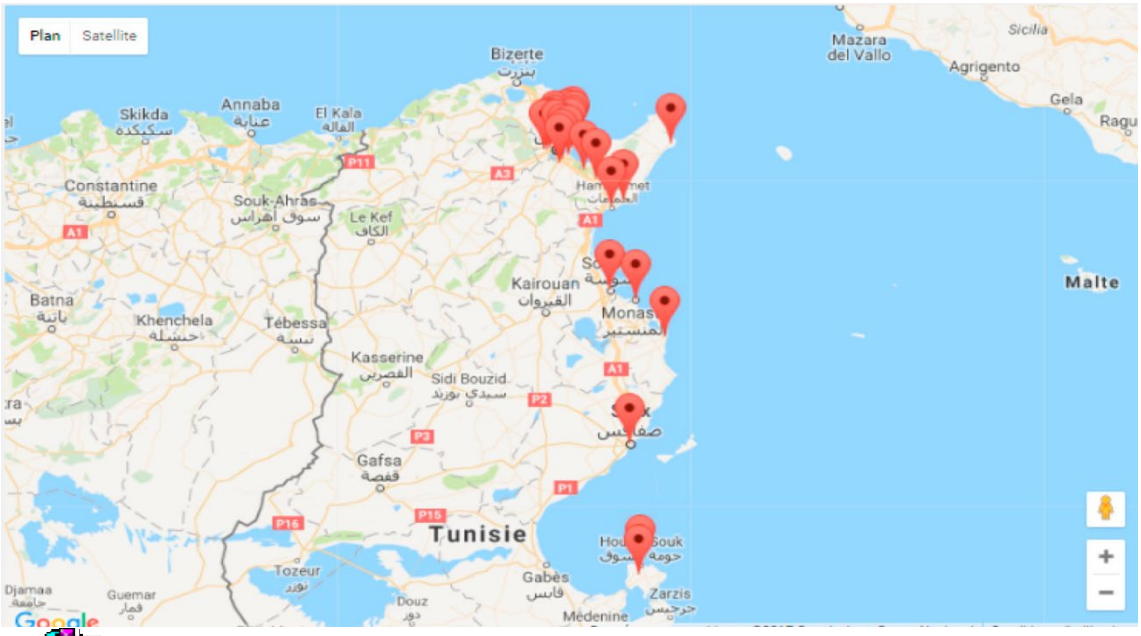

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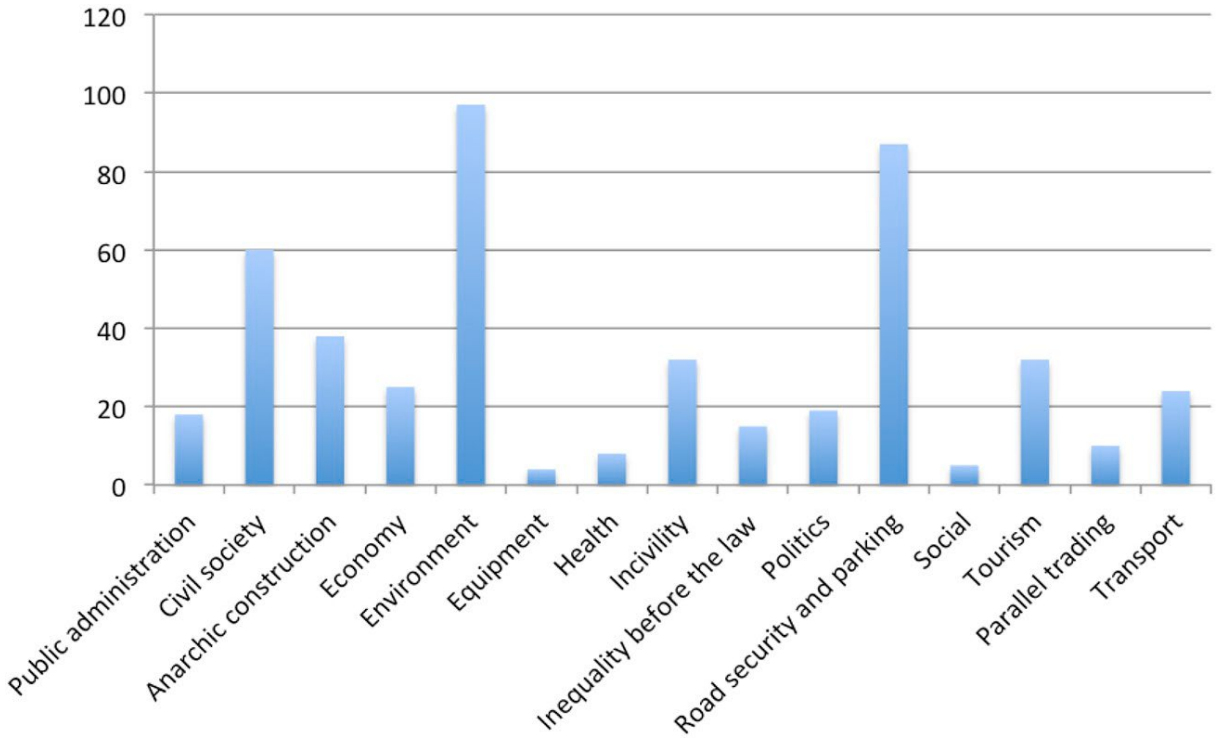
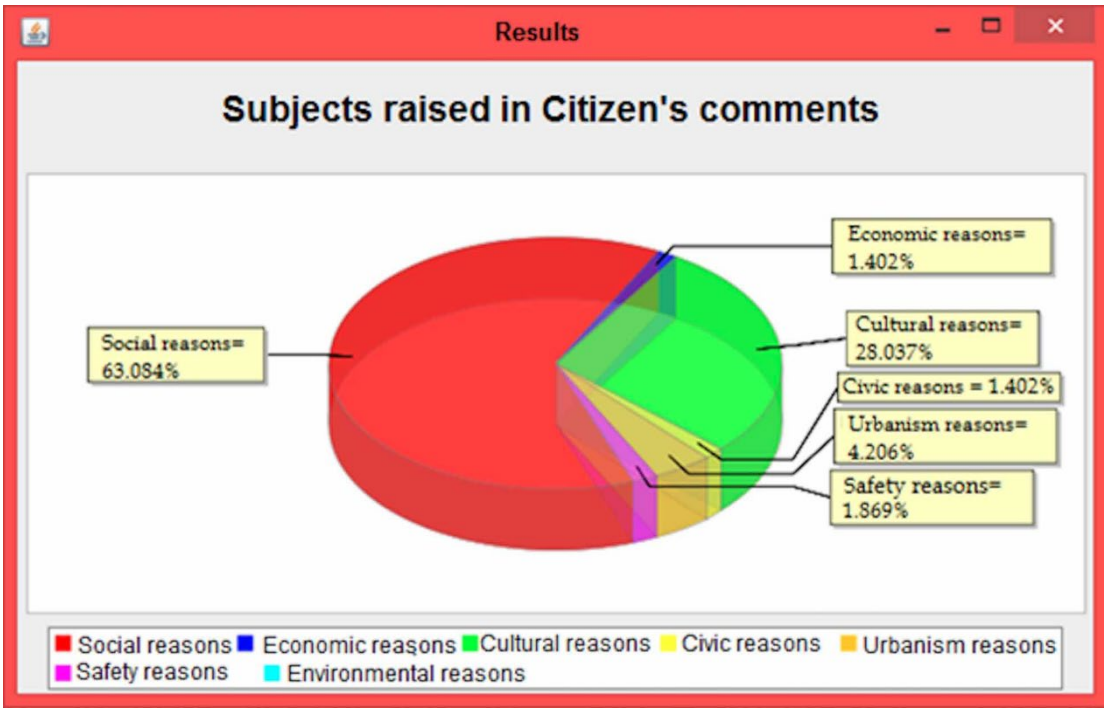
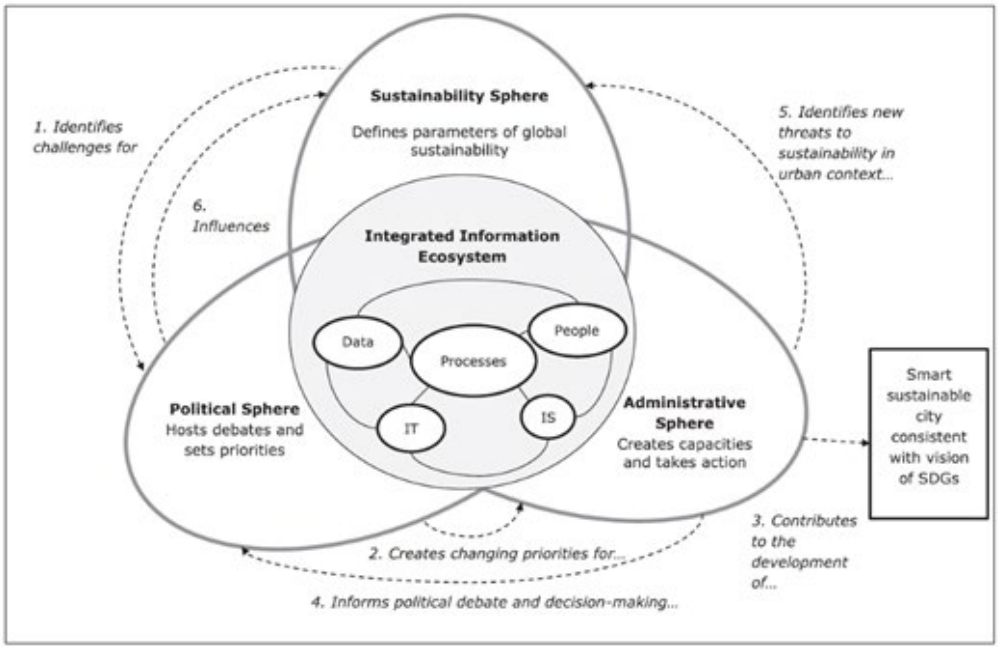
Case Study 1



Case Study 2



Discussion



Next steps

- More theories to understand how to build and use AI solutions in Governments
- Ethical issues need to be considered in AI solutions
- To what extent can be the data analysis reliable for policy-makers?
- To what extent is the data representative of citizens opinions?

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Towards Realization of Spectrum Sharing of Cognitive Radio Networks

Dr. Ahmed M. Fakhrudeen

College of Computer Science and Information Technology University of Kirkuk, Iraq

Abstract

Cognitive Radio Network (CRN) is a promising network that aims to improve the utilization of the wireless spectrum by enabling unlicensed (secondary) users to reuse the underutilized bands. CRN utilization of residual spectrum bands of Primary (licensed) Networks (PNs) must avoid harmful interference to the users of PNs and other overlapping CRNs. Numerous Internetwork spectrum sharing frameworks have been proposed in the literature; however, spectrum sharing among overlapping CRNs presents significant challenges: 1) Overcrowded CRNs, 2) Inter-cell interference, 3) Two or more CRNs move to utilize the same channel simultaneously, and 4) Primary User Emulation Attack (PUEA). In this presentation, I will explain one of the promising solutions to realize CRNs coexistence called the CRNs management framework, CogMnet. The framework verification demonstrates that tackling CRNs coexistence will avoid a dramatic end for these promising networks.

Keywords: Cognitive Radio Network (CRN), CRNs management, CogMnet, Networks (PNs).

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Estimation of Water Levels in Three Different Phases of Underground Tunnel Construction

[1]Lilly R, [2] Jayasurya.R, [3]B. Charith, [4]Anoop Ligy George

[1]Assistant Professor, Naval Architecture and Offshore Engineering, AMET University, Chennai,, Chennai, India

[2] Assistant Professor, Naval Architecture and Offshore Engineering, AMET University, Chennai, India

[3] Associate Professor, AMET Business School, AMET University, Chennai, Student,Naval Architecture and Offshore Engineering, AMET University, Chennai, India

Abstract

In this paper, we have made an attempt to compare the minimum and maximum values of water levels in the three phases of underground tunnel construction. The construction underground metro rail corridor was taken as study area. The water level data was collected and observed for different time periods. The water level data which was collected and observed were divided into three phases of construction. The datas of post monsoon and pre monsoon water levels from 2009-2011 are considered as before construction. The datas from 2012-2015 are considered as during the construction and the datas of post monsoon and pre monsoon levels from 2016- 2017 are taken after the construction. In this the datas from 2009-2015 are collected for the wells around the underground corridors from water resources centres as secondary datas. But the data from 2016-2017 are collected from the primary wells which are located around the underground corridors. The minimum and maximum values of post monsoon and pre monsoon water levels in the three phases of construction are compared to find the impact of the tunnel construction.

Keywords: Water Level, Underground corridor, Tunnel, pre monsoon, post monsoon

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An Analysis on Ship Routing and Scheduling Problems in Liner Shipping

R. Divyaranjani, Assistant Professor, AMET Business School, AMET, Chennai

Dr. Sandeep Kuamr Gupta, Professor, , AMET Business School, AMET, Chennai

Rishith Vishal, Student, AMET Business School, AMET, Chennai

Abstract

The continuous growth in international container traffic volumes makes it ever more important for carriers to optimize their service network. In this thesis, we present a multi-start local search algorithm for solving the routing and scheduling problem in liner shipping. The objective is to find a service network of routes, given the demand between ports that maximizes profit. The algorithm consists of a randomized initialization phase that generates initial networks, and a local search phase that tries to improve the solution using local search operators. For each phase we present different implementations, such that several algorithm configurations are obtained, representing different multi-start local search heuristics. For the first phase, we propose the quantity sort insertion heuristic, and the profit-driven sort insertion heuristic. For the second phase, we propose three local search operators. The route-length operator removes ports from round trips that incur more costs than revenue, and tries to allocate unassigned cargoes by adding ports to round trips. The port-exchange operator relocates ports within a route or between routes in an attempt to improve solutions. The transhipment operator introduces the use of hubs and transhipment to save costs and allocate the remaining cargoes.

Keywords: Multi-start local search algorithm, Multi-start local search heuristics, quantity sort insertion heuristic, the profit-driven sort insertion heuristic, port-exchange operator and transhipment operatör.

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Novel Hybrid-Relay Cooperative Communications Technique for Agriculture

Chikezie Kennedy Kalu
Department of Management Science and Engineering,
School of Management; Jiangsu University,
301 Xuefu Road, Zhenjiang, Jiangsu Province, China.
53 Omu-Aran Street; Unity Estate, Egbeda. Lagos – Nigeria

Prof. Baozhen Dai
Department of Labor and Social Security,
School of Public Health; Southeast University,
87 Dingjiaqiao, Nanjing, Jiangsu province, China, 210009

Olani Bekele Sakilu
School of Finance and Economics
Jiangsu University, 301 Xuefu Road,
Zhenjiang, Jiangsu Province, China.
Ambo University, Ambo; Ethiopia

Simeon Ebhota
Jiangsu University,
301 Xuefu Road, Zhenjiang, Jiangsu Province, China.
Lagos; Nigeria

Abstract

Objective – To investigate and analyses the novel Hybrid-Relay Cooperative communications technique and algorithms which provides the possibility of obtaining improved system performance, with minimal cost, complexities, and overall energy consumption in wireless fading channels while retaining spectral efficiency to aid decision making processes for a more efficient and effective water-agriculture-food nexus.
Methods– Henceforth, the comparative performance and energy efficiency analysis of the fundamental cooperative MIMO techniques namely: Detect & Forward (***DF***), Amplify &

Forward (***AF***) and the Coded cooperation were analysed with respect to the Hybrid Cooperative Communications technique. The methodical and data-driven analyses were carried out using MATLAB and Wireless Communications Systems Parameters.

Results – In harmony with the 'Green Communications' wireless communication theme; the excellent trade – off between performance (data rate) and energy efficiency is confirmed, which of course creates very good potential for use for an improved agricultural monitoring and management system.

Conclusion – The Hybrid-Relay Cooperative communications system serves as a basis for the comparative analysis of the aforementioned cooperative MIMO techniques and provides fundamental, but meaningful deductions and potentials with regards to efficient cooperative communications for innovative, efficient and effective water management for improved agricultural practices and a sustainable environment.

Keywords: Water management, Agriculture, Food Production, Data, Analysis, Hybrid-Relay Cooperative communications system, Decode & Forward, Amplify & Forward, Coded Cooperative Communications, Innovative.

Tool: MATLAB

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Minimization of Waste in Printing Sector of Pharmaceutical Industry Using Lean Manufacturing Tools[1]

Engr Shamsher Khan

Ph.D. Design and Manufacturing, Pakistan

Shamsher Khan

Department of Mechanical Engineering University of Engineering and Technology Peshawar

Tanzeela Sajjad

Department of industrial Engineering University of Engineering and Technology Peshawar, Pakistan

Sanaullah, Depaartment Electrical Engineering,

City University of Science and Information Technology Peshawar, Pakistan

Abstract

Lean manufacturing helps to reduce (eliminate) all t ypes of waste. Keeping the inventory high causes you to dump too much money. Also if you don't have the systematic approach will lead to an inventory ocean.

Throughout the world lean concept and lean applications has been used not only in the manufacturing sector but also in pharmaceutical industry. Few of the Pakistani industries also initiated lean Manufacturing Projects; N UROB lOTlCS 1NDUSTRY was also interested to cut its waste down.

NUROBlOTICS lN DUSTR Y also face the problems of waste management so we are using different techniques and tools to reach out the causes of the problems which was identified as wastages of materials. We use PDCA, VSM and SMED as our lean manufacturing tcinls to reduce waste as the results are given in chapter 4 and 5 the percentage of the waste is reduce from 7°/c to 3°/c as our improve in the project

Keywords: lean manufacturing, waste

[1] **Outline**
This project is about the analysis of waste material (paper) production in a printing sector of pharmaceutical industry (NUTRABIOTICS). The main aim of the project is to work on the smooth production of the printing sector and increased efficiency by eliminating the waste from the production system using (LEAN MANUFACTURING).

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The use of Satellite Data in the Detection of Radioactive Fallout on the Territory of Azerbaijan

Hikmat Hasanov[1] and Ismayil Zeynalov[2]

[1]State Aerospace Agency, Baku, Azerbaijan

[2]Ministry of Science and Education
Azerbaijan National Academy of Sciences
Institute of Geography
After name academician. G.A. Aliyev

Abstract

In the event of possible accidents at nuclear power plants, there is a huge release of radioactive substances into the environment in the form of indivisible particles. As a result of falling out in the form of radioactive fallout during the transboundary mass transfer of these substances over vast distances on the territory of neighboring states. The formation of precipitation over a given area is primarily determined by the moisture content, relative humidity of the air, the conditions of its ascent and evaporation in air masses of various origins, which, under certain circulation conditions, become potentially precipitation-forming. For operational monitoring of environmental pollution studies, it is necessary to use modern methods and means of remote sensing of the earth. This is an integral part of the detection of radioactive waste using low-orbit satellites using synthetic aperture as the basis for research.

Keywords: Radionuclides, radioactivity, radioactive fallout, turbulence, cloudiness, IAEA, low orbit satellites

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Recognition and Classification of Vegetable Types in Agricultural Areas Using the Mobilenet Model Structure

Volkan Kaya[1] and Ismail Akgül[2]

[1]Erzincan Binali Yıldırım University, Faculty of Engineering and Architecture, Department of Computer Engineering, Erzincan, Türkiye
[2]Erzincan Binali Yıldırım University, Faculty of Engineering and Architecture, Department of Computer Engineering, Erzincan, Türkiye

Abstract

Deep learning method is a method that provides superior success in detecting and classifying objects in an image. In this method, an algorithm is generally used that distinguishes objects in complex images. Convolutional neural networks (CNN), especially used in deep learning, are an important research topic in computer-aided recognition and are used in many areas. In recent years, recognition and classification have been made in the agricultural area, as in many areas. Especially with the introduction of special robotic applications into the agricultural area, it is ensured that the workforce and loss in agricultural activities are reduced. Deep learning methods used in advanced robotic applications help to collect objects efficiently by distinguishing them from each other.

In this study, a vegetable recognition and classification system are proposed to support special robotic systems used in agriculture. In this application, the MobileNet model structure, which was previously accepted in the literature, was used. In this model, recognition and classification were made using a data set containing 4 different types of vegetables. According to the evaluation results, it was seen that the vegetable types in the data set were classified correctly with a high success rate.

Keywords: Deep Learning, Convolutional Neural Network, Mobilenet, Vegetable Recognition and Classification.

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Electricity Energy Demand Forecasting for Duzce

Hamdi Aykas[1] and Irem Düzdar Argun [2]

[1]Department of Computer Engineering, Duzce University, Duzce, Türkiye

[2]Department of Computer Engineering, Duzce University, Duzce, Türkiye

Abstract

Energy is the capacity or ability of a system to do work. Energy is an important source of life in today's world civilization. It seems almost impossible to sustain this civilization without energy. Energy has been one of the indispensable needs of our lives from the past to the present. Today, one of the methods to decide the development level of showing a country is can be called the amount of energy used by that country. For this reason, we can state that countries should use more energy in order to develop and developed countries to continue to develop.

Electrical energy can be transported from the region where it is produced to other regions, but cannot be stored, by means of transmission and distribution networks. Because of this, estimating the electrical energy demand is important in terms of operational and financial planning. It is seen that the need for electrical energy is increasing rapidly day by day. In order to meet this increasing need, both state and private sector investments are constantly increasing. Electric energy investments are both financially costly and take years to realize and use. All these situations increase the importance of electrical energy DEMAND estimation day by day. In this paper, using EPDK estimates for both models, the estimated results for Turkey and Düzce electricity demand; Time Series were processed using ARIMA, Tbats.

Keywords: Energy, Forecasting, ARIMA, Time Series, Tbats

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Natural Gas Demand Forecasting for Duzce

Nurgül Aykas[1] and Irem Düzdar Argun [2]

[1]Department of Computer Engineering, Duzce University, Duzce, Türkiye

[2]Department of Computer Engineering, Duzce University, Duzce, Türkiye

Abstract

Energy, ability to do work physically; energy source refers to the sources that produce energy using appropriate techniques. Energy resources are obtained using different methods and techniques. Energy sources can be divided into renewable and non-renewable or primary and secondary energy sources. Energy demand is the amount of energy demanded by individuals, institutions and organizations for the realization of daily consumption and economic activities. There are many factors affecting energy demand. Examples of these factors can be given as population growth, urbanization, economic growth and social development, technological development and productivity.

Natural gas can be defined as a colorless, odorless and lighter-than-air gas consisting of light molecular weight hydrocarbons such as methane, ethane, and propane. It is preferred because of its easy to use. As a result of factors such as industrialization, urbanization and rapid population growth in Turkey, the demand for natural gas has increased considerably due to the efficient aspects of natural gas. It is expected that natural gas will progress equally against demand, save energy and be demanded correctly from foreign countries. Therefore, we searched the importance of forecasting natural gas demand. The accuracy of demand forecasting will make natural gas imports, infrastructure investments and consumption planning in the country more efficient.

Keywords: Energy, Forecasting, ARIMA, Tbats

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Sulfur Analysis in Apricot With Deep Learning Methods

Ertugrul Dogansahin[1], Eser Sert[2] & Muhammed Yıldırım[3]

[1]Department of Informatics, Malatya Turgut Ozal University, Malatya, Türkiye
[2]Department of Computer Engineering, Malatya Turgut Ozal University, Malatya, Türkiye
[3]Department of Computer Engineering, Malatya Turgut Ozal University, Malatya, Türkiye

Abstract

In order to preserve the dried apricots for a long time without spoiling, dried apricots should be sulphurized in the heating chambers. However, this sulphurization must be within specific ppm value ranges. Therefore, there is a need to perform sulfur analysis in apricots. The sulfur analysis is carried out in the apricot research center and Malatya apricot stock exchange between 100₺ - 250₺ and the factories that export apricots employ chemists and perform apricot analysis. This analysis takes between 40 and 180 minutes and this process is a waste of time for those who demand apricots. In this process, approximately 60 liters of water is spent for only one experiment, which means a waste of water. Chemists also work on this process. This challenging apricot sulfur analysis process in this study was automated using deep learning and image processing techniques. Thus, it is aimed to minimize the time and labor loss experienced in the classical sulfur analysis process, and eliminate the waste of water and the use of chemicals. High performance was obtained in the models used in the study.

Keywords: Sulfur, Apricot, Analysis, Artificial Intelligence, Deep Learning

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Yerel Yönetimlerde Elektronik İhale (E-İhale) Süreçleri ve Yapı Bilgi Modellemesi (BIM) Entegrasyonu

Ömer Galip Pınar[1]

[1]İstanbul Medipol Üniversitesi, FBE, İnşaat Yönetimi ve Hukuku Doktora Programı, 34810, İstanbul, Türkiye

ÖZET

Ülkemizde, diğer devlet kurumlarında olduğu gibi, yerel yönetimlerde de her türlü mal ve hizmet alımı yöntemlerinde de yapılan ihaleler için, Türkiye Elektronik Kamu Alımları Platformu (EKAP) adı verilen bir uygulama kullanılmaktadır. Özellikle yerel yönetimlerde hizmet çeşitliliğinin tek bir kurumda toplanması ve söz konusu taleplere hızlı bir şekilde cevap verilmesi zorunluluğu ortaya çıkması sonucu bu süreçlerin hızlı ve sağlıklı bir şekilde çözülmesi gerekmektedir. Yapılan bu çalışma kapsamında da EKAP konusunda uzmanların yapmış olduğu çalışmalar incelenmiş, yapılan literatür araştırması sonucu bunlara örnek verilmiştir. Yerel yönetimlerde yapılan çalışmaların ise daha çok geleneksel yöntemler ile yürütüldüğü gözlemlenmiş, özellikle belediyelerde EKAP sistemi ile entegre edilebilecek bir YBM uygulaması ile öncelikle proje yönetimlerinin daha profesyonel yapılacağı görülmüştür. Bu uygulamaların sağlıklı bir şekilde entegre edilebilmesi durumunda, sonuçlarının nasıl olacağına dair örnekler çalışma içerisinde paylaşılmıştır. Ayrıca pilot bir uygulama ile söz konusu çalışmaların desteklenebileceği ve sahadaki uygulama sonuçları ile yapılan akademik açıklamaların birbiri ile örtüşeceği görülmüştür.

Keywords: Elektronik kamu alımları platformu (EKAP), yapı bilgi modellemesi (YBM), belediyeler, süreç yönetimi, proje yönetimi

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Customer Segmentation with Data from Various Markets Using K-Means Clustering

Kevser Sahinbaş

Department of Management Information System,
Istanbul Medipol University, Istanbul, Türkiye

Abstract

In today's competitive environment, it is important to meet consumer demands and needs in the best way. In this process, it has become a necessity for modern marketing efforts to know consumer behaviour well for businesses to develop strategies. Today, it is critical for companies to divide the targeted market into homogeneous sub-markets including similar behaviours, needs and expectations for customers, to aim to differentiate marketing strategies and actions in terms of the sub-market, to know the customer better, and to follow customer trends easily. For this purpose, in order to cluster the customers, questions including factors such as brand loyalty, quality and price, which are among the factors affecting the purchasing decisions of consumers, were asked to 1037 customers from various brands in the categories of white goods, furniture, clothing, and demographic data such as age, gender, education, income status were collected. Data analytics techniques have been used extensively in customer segmentation that is grouping objects together based on the difference in similarity on each object and providing a high level of homogeneity in the same cluster or a high level of heterogeneity between each group. In this paper, a customer segmentation model based on the clustering method is demonstrated, such as K-means method. According to the findings obtained as a result of the analysis, customers are divided into 7 clusters. The proposed model is expected to provide precise customer segmentation for customer strategy decision making.

Keywords: Customer Segmentation, Customer Data, Clustering, K-Means, Data Science.

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The Application of MySejahtera in Decision Making by the Ministry of Health, Malaysia in the Battle Against Covid-19 Pandemic

Megat Al Imran Yasin, Wendy Jitos, Yusuf Durachman

Faculty of Modern Languages and Communication

Universiti Putra Malaysia, Malaysia

Abstract

Coronavirus (COVID-19) pandemic is considered a global public health challenge. Various measures are being taken globally to contain this pandemic. MySejahtera is a mobile software application for digital contact tracing and has been regarded as one of the most important tools to fight the spread of COVID-19 in Malaysia. Healthcare and business sectors are benefiting the most from this technology. This research presents a comprehensive review of the MySejahtera for contract tracing that is currently being used in Malaysia to accelerate measures against COVID-19. The expected advantages of this new technology over the traditional method of contact tracing include speed, specificity, and mass reach. Beyond its use for mitigating and containing COVID-19, digital technology can complement or even augment the traditional approach to health program implementation. It is hope that this research will also highlight issues and challenges and using of data analytics in implementing strategies for more accurate and granular decisions by the Government.

Keywords: MySejahtera, Tracking Apps, Big Data Analytics. COVID-19

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The Importance of Discrete Mathematics Topics in the Education and Teaching of Computer Science and Engineering

Mehmet Karakoç[1]

[1]Department of Computer Engineering,

Alanya Hamdullah Emin Paşa University, Antalya, Türkiye

Abstract

Discrete Mathematics is the study of mathematical objects and structures that are discrete. Computers use discrete structures to represent and manipulate data. In processing digital information, discrete manipulations of these structures are done. When designing a mathematical model, developing a correct/efficient algorithm, computing something, using/creating data structures, working on programming languages, databases, tables and relations, or implementing a software application, we take many basic/complex actions based on discrete concepts. Set concept is key factor in database -managementsystems. Functions are used in computer programming. Propositional/predicate logic, mathematical proof methods and Boolean algebra are other key factors to write simple/clean code and simplify the given digital logic design. The topics also get the learners prepared for probability theory and statistics, algorithm design and analysis, data communication and computer networks, computer architecture, and artificial intelligence. Discrete Mathematics is one of the basic building blocks for becoming a good Computer Scientist and/or Engineer.

Keywords: Discrete Mathematics, Education, Computer Science and Engineering, Abstract Thinking, Problem Solving.

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