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ICAKMPET

2 ICAKMPET -21

International Conference on

Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology

Hybrid Conference

22nd - 23rd December, 2021

Istanbul

Organized By

Institute For Engineering Research and Publication (IFERP)

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2nd International Conference on

Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology

(ICAKMPET -2021)

Istanbul, Turkey

22nd – 23rd December, 2021

Organized By

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Editorial:

We cordially invite you to attend the **2nd International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology (ICAKMPET-21)** on **22nd–23rd December, 2021**.The main objective of **ICAKMPET -21** is to provide a platform for researchers, students, academicians as well as industrial professionals from all over the world to present their research results and development activities in relevant fields of Recent Challenges in Science and Technology. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

These proceedings collect the up-to-date, comprehensive and worldwide state-of-art knowledge on cutting edge development of academia as well as industries. All accepted papers were subjected to strict peer-reviewing by a panel of expert referees. The papers have been selected for these proceedings because of their quality and the relevance to the conference. We hope these proceedings will not only provide the readers a broad overview of the latest research results but also will provide the readers a valuable summary and reference in these fields.

The conference is supported by many universities, research institutes and colleges. Many professors played an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in there view process, and to the authors for contributing their research result to the conference.

Since October 2021, the Organizing Committees have received more than 80 manuscript papers, and the papers cover all the aspects in Science and Technology. Finally, after review, about 33 papers were included to the proceedings of **ICAKMPET -21**.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of **ICAKMPET -21** We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.

Acknowledgement

IFERP is hosting the **2nd International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology- 2021** this year in the month of December. The main objective of **Engineering and Technology** is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The session will serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and be known as a thoughtful leader.

I express my gratitude to all my colleagues, staffs, professors, reviewers and members of organizing committee for their hearty and dedicated support to make this conference successful.

Rudra Bhanu Satpathy
Chief Executive Officer
Institute for Engineering Research and Publication (IFERP)

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Keynote Speakers

Dr. Hatem Hatef Abdulkadhim Alyasari Altaee

Professor of Econometrics
Cihan University – Sulaymaniyah
Sulaymaniyah,
KRI, Iraq

Message

On behalf of the organizing committee, it is our pleasure to welcome you to the 2nd International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology (ICAKMPET-21)" to be held on 22nd - 23rd December 2021 in the city ofIstanbul, Turkey. This conference will attract researchers in the areas of engineering, technology, and management. It is indeed a great place for us to meet in this international conference in order to exchange our experiences and knowledge.

I hope that you will find time to explore istanbul and the surrounding areas. Istanbul City is a great place to tour and explore on your own. Please take full advantage of this opportunity during your stay in the City. The scientific program of the conference is designed to provide valuable benefits and networking opportunities to its participant, it also provides a tremendous atmosphere for fresher researchers and post graduate students to learn about future prospects and professional development activities.

Dr. Suman Majumder

Head of Research and Development
Bajaj Consumer Care
Mumbai, Maharashtra, India

Message

At the outset, I would like to thank the organizers of the 2nd International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology (ICAKMPET-2021) held virtually on 22nd - 23rd December 2021, for inviting me to be a Keynote Speaker. It is organized by Institute For Engineering Research and Publication (IFERP) and I would like to congratulate them to take the most relevant theme of "The advancement trends from multidisciplinary perspectives in Engineering and Technology". This is to do also with a 360-degree innovation which is not only to invent and innovate a new product or technology at lab scale but also to scale it up through new advanced and smart manufacturing platforms to deploy it and make it available in an affordable way to millions of consumers and customers across the world.

This conference will help bring together Academicians, Scientists, Research scholars, and Students, to share and disseminate information on knowledge and scientific research works related to multidisciplinary topics and will confer the practical challenges encountered and the solutions adopted. The conference will create a path to establish a research relation for the authors and listeners with opportunities for collaboration and networking among the universities and institutions for promoting research and developing technologies. This august gathering of many wise minds reminds me of the great saying of Alexander Graham Bell, a Scottish-born inventor, scientist, and engineer who is credited with inventing and patenting the first practical telephone, the first mode of long-distance communication that " Great discoveries and improvement invariably involve the co-operation of many minds". Many minds have many perspectives and these multidisciplinary perspectives put in one place will churn out game-changing solutions relevant to solving the problems related to the human race.

Whether it is related to sustainability, health, and prosperity, no great innovation can be done single-handedly. So, I would like to invite you all to this two-day conference with a high hope that all of you will learn and share, and by the end of two days before you leave you to gather immense knowledge and insights and build a great network through which you can excel in collaboration in future. My best wishes to all of you for a safe and successful year ahead.

Dr. Suhail Mohammad Ghouse

Associate Professor of Marketing and Entrepreneurship
Dhofar University,
Oman

Message

On behalf of the conference organizing committee, I feel delighted to welcome you to the 2nd International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology (ICAKMPET-21), to be held on 22nd-23rd December, Istanbul, Turkey. The conference is open to the inspiring researchers in the areas of engineering and management.

I am hopeful the event is going to a venue of knowledge exchange, with new creative ideas being presented by the global reseschers. Due to the multidisciplinary nature of the conference, there would exist networking opportunities for the future collaboration of the participating researchers. These kind of events are significant for the early career researchers and PhD students. Since the conference is in Istanbul, you will enjoy the experience of a major multi-cultural city connecting the east and west with significant historical connections.

I wish all the best to the conference participants and the organizers!

Dr. Robert Eberhart

Associate Director of Research on Entrepreneurship and Society
Stanford University
California

Biography

Robert N. Eberhart (Ph.D. Stanford 2014) directs research at Stanford University's Graduate School of Business where he studies entrepreneurship and how it shapes society. He earned his Ph.D. in Management Science from Stanford University and his academic publications span topics such as new theoretical constructs on how institutional change has complex effects on new firms and how entrepreneurship is changing society. He sits on the boards of technical ventures and non-profits in the U.S. and Japan. Before his academic career, Dr. Eberhart was a partner at Pacific Rim Partners, and he was the founder and CEO of WineInStyle KK in Tokyo, Japan. He has advised governments in the U.S., Japan and Sweden. Prior to founding WineInStyle, Dr. Eberhart was an executive with semiconductor and electronics hardware companies.

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2nd International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology

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ABSTRACTS

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2nd International Conference on
Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology
Istanbul, Turkey, 22nd – 23rd December 2021

Cable Tensions Optimization in Cable Driven Parallel Robot for 3D Structural Printing

Suad Abdul Kareem Alhaj Mustafa, Mechanical Engineering dept, Khalifa University, Abu Dhabi, UA

Bashar El-Khasawneh, Mechanical Engineering dept, Khalifa University, Abu Dhabi, UA

Abstract
A new kind of large scale, suspended cable driven parallel robots (CDPR) is proposed in this paper as a potential substitute for conventional 3D building printing methods. In terms of workspace, usability, and power usage, the proposed CDPR outperforms the competition. To find the robot's optimum reconfiguration, a comprehensive approach for solving a nonlinear optimization problem is suggested. Various limitations and success expectations are discussed, as well as critical issues.

Keywords
CDPR, Optimization, LP, PsP, tension

A Methodology for Product Recommendation Based on User-System Interaction Data on Computer Systems E-Commerce Web Site

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Mehmet S. Aktas, Yildiz Technical University, Istanbul, Turkey

Yunus Sahin, Casper Bilgisayar Sistemleri A.Ş., Istanbul, Turkey

Abstract
Within the scope of this study, we developed a product recommendation methodology for customers by analyzing shopping behaviors based on user-system interaction data collected on Casper Computer Systems' website. To achieve the "right product to right customer" objective, we predict customer interests using a collaborative filtering algorithm on collected data from previous customer activities. In turn, this minimizes prediction errors and enables better-personalized suggestions of computer system configuration. We took advantage of the implicit feedback approach while modeling customer behaviors if they liked or disliked a particular product. After customer behavior data is collected, we form the customer-product matrix and generate personalized product suggestions for each customer with the help of user-item-based collaborating filtering and item-item-based collaborating filtering algorithms. To generate personalized suggestions, customer-website interaction is key as an input variable. Customers are supposed to use the website and leave interaction data regarding product configurations they're interested in. To prove the efficiency of this methodology, we developed a prototype application. Product suggestion success rate of the application is tested on datasets which are generated from log data of Casper website. Performance results prove that the developed methodology is successful.

Keywords
recommendation systems, collaborative filtering, user-system interactions

Explorative study on how Technology as an agent can be a dumb or absorbing entity; a case study on EPR of UK hospitals

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Dr. Mahmoud Abdelrahman, senior lecturer, University of Northumbria

Abstract

For information systems implementation, the agency theory offers unique insight into IT implementation, outcome uncertainty, incentives, and risk. However, the main argument of the agency theory is related to identifying the Principal-Agents and the problem in determining the accountability that arises when delegating authority to the agents. This research has used the case study of implementing EPR technology in the NHS hospitals helps in understanding the characteristics of the healthcare systems, and the challenges facing the technology innovation and implementation. It aims to understand the IT implementation in the healthcare and must-be-principal vs the actual principal and how the scarcity of the material potentiality is acting as a dominant factor of change resistance. It is founded that this this phenomenon happens when the IT (the agent) does not belong to the practice (the principal discourse). As a result, it is possible to say that the mismatch of planning horizons between the principal (professional practice) and agent (Electronic-Patient-Record technology) occurs inversely when comparing the phenomenon in healthcare organization. From practice-based-perspective, the absorbing entity is the IT, which requires a maximum interaction between the human and nonhuman without adding value to the practice at least from one stakeholder's perspective (neither being for users nor becoming from practice). In conclusion, the structuring of technology implementation in the healthcare sector from the agency theory perspective allowed the formulation of relations that complement the generalities of the theory, contributing to better understand its application and to propose a research agenda.

Keywords

Electronic Patient Record, Agency Theory, Information System Implementation, Theory of Practice

Influence of New Student Admission Selection Test Results on Student Learning Achievement of Vocational Program Field Science Technology and Social Humaniora

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IGP Asto Buditjahjanto, Faculty of Engineering, Universitas Negeri Surabaya

Setya Chendra Wibawa, Faculty of Engineering, Universitas Negeri Surabaya

Abstract
{The new student admissions selection test is the basis for determining prospective students' acceptance in higher education. The selection test for new students generally consists of a basic ability test (TKD) and a test of academic ability and potential (TKPA). This study aims to analyze the effect of the new student result of admissions selection test on student achievement in the Universitas Negeri Surabaya (Unesa) Vocational Program in the fields of Science and Technology (exact) and Social humaniora (non-exact). This research is ex post facto research. The data analyzed were the results of the new student admissions selection test and the academic achievement index scores of the Unesa Vocational Program students in the field of Science and Technology and Social Sciences class of 2019 and 2020. Figural, Verbal, Numeral, Mathematical, Indonesian, and English variables as independent variables. Achievement variable (GPA) as the dependent variable. Data analysis using SEM. The results of this study are as follows (1) Vocational Program entrance test refers to empirical data that determines the test components are figural, verbal, and numeral (2) In the Vocational Program in the field of Science and Technology class of 2019, the test variables for the selection of new students that have the most significant influence on learning achievement are Indonesian, English and Numeral. (3) In the Vocational Program in the field of Science and Technology batch 2020, the test variables for selecting new students that have the most significant influence on learning achievement are Figural, Verbal, and Mathematical. (4) In the 2019 Social humaniora Vocational Program, the variable for the new student selection test that has the most significant influence on learning achievement is Figural and Indonesian (5) In the Social humaniora Vocational Program class of 2020, the variable for the new student selection test that has the most significant influence on learning achievement is Figural, and English (6) In general, the test components related to student's IP are figural, verbal and numeral}

Keywords
Selection Test, Learning Achievement, Science and Technology, Social

Simultaneous Determination of Heavy Metals in Competitive Aqueous Solutions and Contaminated Soil Systems

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Edward Yeboah, Principal Research Scientist, CSIR-Soil Research Institute, Microbiology Division, Ghana.

Abstract
Oftentimes, errors and unreliable results arise from analytical instruments employed. In this study, Potentiometric Stripping Analysis (PSA) was used to quantify heavy metals in a competitive aqueous solution containing *Spirulina platensis—Spirulina maxima* cells with heavy metals due to the following advantages; higher sensitivity, lower detection limits, simultaneous multielement detection, accuracy, fast, suitability for on-line and in-situ measurements and cost effectiveness. Electrochemical and chemical parameters were optimized for efficient deposition and stripping steps. Measured data were loaded onto Langmuir and Freundlich isotherms which demonstrated that, the data best fitted with the Langmuir isotherm with R_L=0.963067 and R^2= 0.99901 against the Freundlich isotherm with 1/n = 1.024391 and R^2 = 0.98735. Linear logarithm and stripping relationship were achieved as follows; 3.12×10 to 4.20×10^7 cfu mL^{-1}, 2.67×10 to 2.3×10^7 cfu mL^{-1}, 1.31×10 to 2.10×10^7 cfu mL^{-1} for Cu^{2+}, Zn^{2+} and Pb^{2+} respectively. Phytoavailability test on complex soil from mining areas was also performed. It revealed that, physical and chemical soil properties are responsible for non-phytoavailability of Cr and As from these soils systems. Potentiometric Stripping Analysis and Atomic Absorption Spectroscopy (AAS) results are compared.

Keywords
Atomic Absorption Spectroscopy (AAS), Freundlich isotherm, Langmuir isotherm, Phytoavailability, Potentiometric stripping analysis (PSA).

Vibration Analysis and Optimization of Wind Turbine Blade with Composite Materials

Dr. Saeed Asiri, Department of Mechanical Engineering, Faculty of Engineering, King Abdulaziz University, Jeddah, Saudi Arabia

Abstract
It is well known that the rotor's sharp edge is an essential part of the breeze turbine. Wind turbines provide an alternative means of generating electricity from the wind's power. The plan of edge is crucial for energy extraction. Wind turbines can be used to generate enough electricity in windy areas and high airflow speeds. The blades of such turbines are designed to generate lift from the wind and transform as a result. In this paper the leading edge of a breeze turbine is analyzed in Solid Work for five different materials: Structural Steel, Adhesive Epoxy Carbon, E-glass, S-glass, and Aluminum Alloy. The paper then explores the use of ANSYS programming to analyze the Wind Turbine Blade to determine the edge's intensity and compare the above materials to determine which is the best material for the wind turbine edge. The results demonstrate that Epoxy carbon and primary metal have the least value in terms of strain and deformity, but once a mass event occurs, the resulting steel has a wide range of properties. As a result, it's reasonable to assume that Epoxy Carbon is best suited to make turbine cutting edges.

Keywords
Wind turbines, ANSYS, Finite Element, Optimization, Composite Material.

Technical approaches to improve Producing Oil from a Depletion Drive reservoir

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Abstract
A type of reservoir drive mechanisms which is distinguished by incessant and rapid decrease of reservoir pressure is called depletion drive reservoir. The performance of reservoir will be declined directly by this rapid and continuous decline of reservoir pressure at initial phases of the reservoir s' lifetime. Releasing gas from the crude oil is indicated as the main source of energy and the solution gas will start to expand, when the reservoir pressure is reduced and it is insufficient to produce economic amount of crude oil from the reservoirs. Producing crude oil naturally from depleted gas drive reservoir will result in leaving a substantial amount of the crude oil as residual oil saturation, thus it is mentioned as the lease efficient mechanisms of primary recovery.
Crude oil recovery from depletion drive reservoir can be utilized and improved at later period of the reservoir's life by using artificial lift, for example, applying lifting with continuous gas or with velocity string or positive displacement pump. In this study a synthetic data based on material balance is examined to prognosticate primary oil recovery for a depletion – gas drive reservoir. the examination will show the factors that based on can be decided and suggested to apply either velocity strings technology, continues gas lifting or positive displacement pumping are to be utilized based on time at various phases of the reservoir's life.

Keywords
Depletion Drive, Oil Recovery, Oil Well Performance, Inflow Performance, Outflow Performance, Tubing String Design

Body Area Networking and Live Location Tracking System in War Fields

Salma Fauzia, Assistant Professor, Muffakham Jah College of engineering and Technology, Hyderabad, India

Abstract
Security is a top priority for all nations nowadays. Wars are waged over control of territory, water, and the title of most powerful nation. The army, navy, and air force are the three professional uniformed services that make up a country's armies. Soldiers are the foundation of any military force.Soldiers who are involved in combat situations frequently die owing to a lack of medical assistance.On the battlefield, missions or special operations personnel become disoriented and lose communication with the authorities.To address these problems, we created this project, which employs a wireless body area sensor network.(WBANS), such as a temperature sensor or a heartbeat sensor, will keep track of the soldier's health. whenever the need arises We may also track the soldier's exact location using GPS whenever necessary. We can also monitor the ambient condition with an oxygen level sensor, allowing authorities to give necessary services and first aid. Between the soldiers and the base unit, contact is established. Anomalies in the readings of wireless body area sensor networks (WBASNs) are seen as a trigger for GPS to establish a link between the soldier and the base unit, as well as relay the soldier's current location as well as the soldier's health status We tried to implement the basic guarding system for the soldier which is low cost, light weighted, portable and precise device.

Keywords
Body area networks, Remote monitoring, IoT

Artificial intelligence and lean in the service of patient comfort: Modelling Healthcare process (Hospital 4.0)

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Abdelmajid ELOUADI, Ibn Tofail University/ Ensa Kenitra

Abstract

Covid-19, which first appeared in Wuhan, spread worldwide. In Europe, Italy and Spain were the first countries affected, before the whole continent was affected. This health crisis has affected the whole world and at all levels (hospital capacity, number of health personnel, shortage of medicines, ...).

To stem its spread, many countries have taken unprecedented measures, including quarantining cities or a generalized confinement of the population.

With 1,621 15 deaths worldwide at the beginning of December 2020, this disease has shown that the health system is not sufficiently prepared to deal with the Coronavirus.

COVID 19, like any other disease, requires a follow-up of its evolution to reduce its harmful effects. In order to ensure the comfort to the patients by offering them a care path adapted to their situation, the exploitation of artificial intelligence within the hospital is necessary and this by approaching the human cognition in the analysis of complex medical data.

The objective of this study is to generate the patient's care pathway from his initial state from the first consultation with the doctor.

To do this, we will have to optimize the hospital supply chain by modeling the patient's care pathway.

First, we will proceed by identifying all the entities contributing to the hospital logistics chain.

Then, the Multi Agents method will be used to model all the parts concerning the course of the treatment (radiology, surgery, pharmacy, accounting, ...) and to show the interactions that can take place to make them as effective as possible.

Finally, the model obtained will be optimized thanks to the use of lean to deliver to the patient what she needs when she needs it, and in the required quantity.

Keywords

Hospital 4.0, Healthcare process, Lean, COVID 19, Multi Agents method, Artificial intelligence, optimization, patient comfort

Decision Making Support System for Medical Devices' Maintenance Using Fine-tuned *k*NN Classifier

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Nour Afiouni, Product and Application Specialist, Acendis Healthcare GmbH

Morad Etier, Associate Professor, The Hashemite University

Mohannad Jreissat, Assistant Professor, The Hashemite University

Abstract
This paper provides an improved decision support system for selecting the most appropriate maintenance strategy. Manually selecting the best maintenance strategy for medical devices requires a lot of expertise, therefore this paper suggests an efficient automated system based on fine-tuned *k* Nearest Neighbour classifier. Genetic Algorithm was used to select the best input weights and giving appropriate weights to each maintenance strategy. Several input variables were used that include device price, age, equipment management number, repair cost, availability, and utilisation. Accuracy of the modified *k* Nearest Neighbour model was compared to several well-known classifiers such as Decision Tree, Support Vector Machine, and Linear Discriminant Analysis based on collected data from 735 unique medical devices. Results shows that the simple yet fine-tuned *k* Nearest Neighbour model can choose the best maintenance strategy accurately and outperform other sophisticated classifiers.

Keywords
Medical devices maintenance, k Nearest Neighbour, Genetic Algorithm, Maintenance strategy.

Experimental Investigation on Hybrid Fibre-Reinforced Concrete Deep Beams

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Dr. S.A.Halkude, Professor in Civil Engg. & Principal, Walchand Institute of Technology, Solapur, India

Abstract
Researchers have established that the inclusion of steel fibres in concrete for R.C. deep beam delays crack formation, transforms the brittle behaviour of deep beams into increasingly ductile behaviour, prevents sudden shear failure and improves the shear strength of deep beam. It is also recognized that using hybrid fibre reinforced concrete (HFRC), reinforced with two or more different types of fibres, can produce better results. The hybrid fibre combination of metallic and synthetic fibres provides effective confinement and better bonding with concrete, as well as it allows for easier stress transfer from matrix to fibres. In this connection, the present study focuses on the inclusion of hooked end steel fibres and fibrillated polypropylene fibres in predefined proportions in the concrete mix to cast HFRC deep beams and study the effects. The present experimental investigation demonstrates that the inclusion of hybrid fibres improves the strength properties of concrete significantly. Moreover, it leads to a rise in first crack load, a significant increase in ultimate shear strength, and a substantial increase in reserve strength of HFRC deep beams when compared to conventional R.C. deep beams. Also, study reveals that it is possible to replace conventional shear reinforcement in deep beams with 1 per cent hooked end steel fibres and 0.3per cent fibrillated polypropylene fibres by volume of concrete, to obtain high shear strength deep beams with increased ductility, reserve strength and lower reinforcement congestion.

Keywords
Deep beams, hooked end steel fibre, hybrid fibre reinforced concrete, shear strength

Influence of Adopting Value Engineering on the Structural Cost of Construction Projects in Jordan

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Dr. Orabi Al Rawi, Associate Professor, Civil Engineering Department, University of Petra.

Abstract

The construction sector in Jordan is considered one of the most draining sectors of financial resources, and that may be due to the failure to use modern technologies that aim to control these unjustified expenditures and reduce the waste of those funds. Therefore, the objective of this research is to analyze all required steps to apply the concept of value engineering as a method for solving engineering problems that facing construction projects in Jordan especially those related to financial aspects. The methodology of conducting this research considered a sequence of steps started from reviewing for the available literature that are related to the research topic, and then through adopting a specified case study in a form of a governmental construction project to analyze the influence of applying value engineering to the structural works of this project on the reduction in the total project cost. Several engineering software's were used for this purpose such as "Etabs, Scada Pro, and ACE - OCP", in addition to utilizing the manual design concepts based on the design codes in Jordan. Out of the results derived from this research, it was concluded that the cost reduction due to applying value engineering constituted 8.23% from the structural works cost, and 3.54% from the total project cost after utilizing ACE-OCP plugin and Scada- Pro software; whereas, when applying manual design concepts to the optimized structure by ACE-OCP the structural work cost was reduced by a percentage of 10.6 %. In general, it was proved that applying value engineering showed a reduction in the total project cost with a percentage of (4.56%).

Keywords

Value Methodology, Quality, Functionality, Total Cost, Value Engineering, Value Analysis.

Assessment of ambient particulate matter and trace gases in the Makassar urban area South Sulawesi Province of Indonesia

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Kusno Kamil, Universitas Muslim Indonesia, Department of Mechanical Engineering, Makassar

Nani Anggraini, Universitas Bosowa, Department of Environmental Engineering, Makassar

Ramdiana Muis, Universitas Muhammadiyah, Department of Urban and Regional Planning,Pare-Pare.

Rani Bastari, Universitas Muslim Indonesia, Department of Civil Engineering, Makassar

Abstract
This paper presents monitoring results on Air Quality of ambient in Makassar City South Sulawesi Province, Indonesia namely SO_2, CO, NO_2, O_3, TSP, PM_{10} which is the average annual collected during the five years 2014 - 2019. The data are obtained from measurements made by the office of Ministry of Environment Sulawesi, Maluku and Papua and Environment Board of the Province of South Sulawesi as well as Environment agency of Makassar City. These three institutions is a coordinated manner and responsible for monitoring of air quality in Makassar. Subsequently, these values are compared to the air quality threshold recommended by the Indonesia National Ambient Air Quality Standards (INAAQS) and guideline based on the World Health Organization (WHO). The results indicate that there are several pollutants exceed the standard in a given year, but the most important to be attention is TSP and PM_{10}. Efforts and strategies should be taken continuously to achieve a clean and healthy air.

Keywords
Air Quality; Ambient particulate matter; trace gases; Makassar.

Detection of depression in text posts on Facebook profiles of Spanish-speaking users

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Gonzales Suarez, Juan Carlos, MSc. in Computer Science and Informatic; San Marcos National University

Abstract

According to the World Health Organization (WHO, 2020), depression is one of the disorders that affects more people worldwide. Depressed people can be affected during different situations in their life, such as their social or family relationships, or in their work participation, as well as other aspects. One of the biggest challenges is the correct detection of this disorder in people, since a bad diagnosis can harm the best treatment of the illness in those who suffer from it or diagnose as healthy those who really suffer from it. This motivates us to propose, design and develop a web system like help detect the level of depression in Facebook users who communicate in Spanish. For the construction of this web application, natural language processing techniques were used, proceeding to reduce and encode the information, performing a data preprocessing that included a selective analysis and normalization of the Facebook information that makes it accurately described. The random forest algorithm was used in the evaluation original data set, since through the literature review and previous research it was demonstrated to be one of the most effective algorithms for the detection of depression, being able to serve as a basis for specialists in treating this evil.

Keywords

Depression, machine learning, natural language processing, random forests

An Approach to Machine Learning Workflows for Predicting Purchase Behavior of Users on Computer Systems Websites

Tahir Enes Adak, Casper Bilgisayar Sistemleri A.Ş., Istanbul, Turkey, Boğaziçi University, Istanbul, Turkey

Mehmet S. Aktas, Yildiz Technical University, Istanbul, Turkey

Abstract

Within the scope of this study, customers' purchase behaviors are being predicted by analyzing interaction data between customers and an e-commerce website selling computer hardware. To that extent, we created feature vectors using customer interaction data and formed a feature matrix at the end. We cleaned the data with the help of data pre-processing techniques. We created a labeled dataset out of a feature matrix using finalized purchase history data of customers. We predicted purchasing behaviors of unknown customers by creating machine learning models on the labeled dataset. A machine learning workflow that predicts customer purchase behavior is being developed in this research. Analyzing customer-website interaction data with machine learning techniques helps us predict successful purchases. To test the performance of our machine learning workflow, we developed and evaluated a prototype application. Evaluation results show that our workflow successfully predicts customer purchase behavior for different computer system configurations.

Keywords

machine learning, purchase behavior, supervised learning, click-stream data analysis

Analyze the influence of liquidity on profitability and Stock Returns (using a group of Jordanian companies working in the Food& Beverage sector ("F&B") listed in Amman Stock Exchange)

Dr. Fouzan Al Qaisi, Banking and Finance Department, The American University of Madaba, Amman, Jordan

Abstract
The primary objective of this research is to verify the trade-off between liquidity & profitability over the short run, in order to determine how the change in liquidity strategies can either positively or negatively affect the company's profitability. This study has been processed to analyse the influence of liquidity on profitability using a group of Jordanian companies working in the Food& Beverage sector ("F&B") during the period from 2013 to 2016. The companies are listed and traded on the Amman Stock Exchange ("ASE"). Based on the companies' published financial data, the relationship was observed & determined with the help of statistical procedures. The observations are presented as follows: It was observed a significant positive correlation between liquidity (assessing by the Current Ratio) & profitability (assessing by Return on Assets) on the short period of time, contrasting the most literature. It was observed a correlation between liquidity (measured by Cash Conversion Cycle) & profitability (measured by Return on Assets) a significant negative correlation on the short run, supporting the main literature.

Keywords
Profitability, liquidity, Stock Returns, Jordanian companies.

A Software Architecture for a Crowd-Sourcing Based Usability Testing Tool

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Mehmet S. Aktas, Yildiz Technical University, Istanbul, Turkey

Abstract
Within the scope of this study, we develop a software architecture to enable exploratory and usability tests of smartphones, notebooks, desktop computers, and similar devices to find and fix bugs and errors of software, which run in these mentioned devices. The developed software architecture is based on lambda software architecture. It is designed to enable making usability tests by crowd-sourced data inputs. Due to tests getting run simultaneously with the real-time process and data collection on test user's devices (notebook, desktop, smartphone, etc.), it enables real-time and user-focused testing. The software architecture we developed with complex event processing, batch-processing and streaming-based data processing techniques enables analysis of test data in real-time. We developed a prototype application to prove the efficiency of suggested software architecture while being used in crowd-sourced usability tests. Performance analysis of this prototype application was carried out by taking into account scalability and response-time criteria. Performance analysis results prove that the suggested software architecture is successful.

Keywords
usability testing, complex event processing, crowd sourcing-based testing, software architectures

Perspectives of Teachers and Parents on Mathematics Learning In Early Grades Student during School from Home

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Tatang Herman, Universitas Pendidikan Indonesia; Kisno, Institut Agama Islam Negeri Metro

Abstract

This research was motivated by necessary to analyze the extent which the perspectives of teachers and parents on learning mathematics in the first grade of elementary school during school from home at the covid-19 pandemic. The purpose of the study to see the process of implementing mathematics learning during the pandemic-19 period and to explore deeper information about respondents' perspectives on learning mathematics during school from home. The subjects in this study are the teachers and parents of early students at the State Elementary School 10 Metro Timur, Metro City, Lampung. The method used in this research is descriptive qualitative. Data obtained through observation and interviews. Based on the results of the study, information was obtained that teachers and parents had clashes in interpreting and implementing mathematics learning in lower classes during school from home. In addition, various obstacles experienced by teachers and parents were also found in the implementation of mathematics learning for children in early grades during School From Home.

Keywords

perspectives, teachers and parents, mathematics learning, school from home

Recognition of emotions by analyzing facial expressions from user experience evaluation videos

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Abstract
New technologies grow every day, some examples are robots, augmented reality technology, algorithms and machine-to-machine communications that facilitate the development of various activities. In this sense, the evaluation of the user experience (UX) must also adapt to these advances, a relevant source of information in the UX process is the affective computation by means of facial expression analysis techniques that the user presents during the interaction with a software product, for this reason, this article presents an emotion recognition system through the analysis of facial expressions using a Vector Support Machine (SVM) classification algorithm. Characteristic points of the face were extracted using a pre-trained model which locates 68 points (x, y) and places them on the face, of which only 17 points were used to calculate geometric distances between certain muscles of the face, which allows identify emotions, the classification algorithm was trained with own dataset. The tests were with the CK+ dataset used in the literature, tests were also carried out with videos. The results obtained were 84.52% accurate, in the recognition of three emotions: happiness, anger, surprise and neutral.

Keywords
classifier, Emotions, artificial vision, Facial Action Code System, facial recognition.

SQL Injection Vulnerabilities: Understanding Eliminating Approaches in Web Applications

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Abstract
Structured Query Language Injection Vulnerabilities (SQLIVs) have consistently been top-ranked for the past few years, as eventually specified by the Open Web Applications Security Project (OWAPS). SQL Injection Attack (SQLIA) is a technique that exploits SQLIVs that occur in the database layer of a web application. The consequence of SQL injection attack would be devastating. A successful attack can threaten data confidentiality, data integrity and application availability. Finding the proper solution to stop or mitigate SQL injection is necessary. Researchers introduce different techniques to develop secure codes, eliminate SQL injection vulnerabilities, and prevent SQL injection attacks for addressing this problem. This paper concentrates on various security approaches for eliminating SQL injection vulnerabilities in the early stages of the software development life cycle. It also describes some exist gaps in the current state of the art of eliminating SQL injection vulnerabilities.

Keywords
Web application; SQL injection; Vulnerabilities; Removal; Automated vulnerabilities elimination.

Security Impact of Cross-site Scripting Vulnerabilities on Web Applications and Their Awareness

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Abstract
Cross-site scripting (XSS) vulnerabilities are one of the most common and most dangerous security vulnerabilities that affect web applications for the last two decades as well as the mobile versions of web applications more recently. They can seriously affect web application users with the loss of their personal information to attackers. In addition, other security problems can occur including denial of service attacks, phishing, and exposure to malware and viruses. Most of the previous proposed solutions to cross-site scripting vulnerabilities focused only on the Desktop versions of web applications and not the mobile versions. However, this is changing as more researchers are also including the mobile versions in their proposed solutions. This is because more people are using their mobile phones to access web applications and they face an increasing threat of cross-site scripting attacks and the possibility of being victimized. In this paper, we explore and discuss the security impact that cross-site scripting vulnerabilities have in modern web and mobile applications, and the importance of raising awareness of these vulnerabilities, not only within the technology industry but also to the public.

Keywords
cross-site scripting, cross-site scripting attacks, cross-site scripting vulnerability, software security, XSS vulnerability awareness.

Improvement of Jaw Crusher Design by DEM & FEA Approach

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Yaghmur ABILOV, MEKA Beton Santralleri AŞ

Abstract

Jaw Crushers are used as primary crusher at quarries, mines, and concrete recycling operations. Rocks, Rubbles and Slags are broken into small particles in jaw crusher under the high pressure exerted by moving and stationary jaws of crusher.

Crushing Pressure created by jaw crusher depends on design parameters such as; drive shaft eccentricity distance, toggle plate position, drive shaft revolution speed etc. In this study, Discrete Element Method (DEM) and Finite Element Analysis (FEA) approaches are used to obtain optimum design for crushing performance of crusher and the operation of the crusher for various type of materials. DEM & FEA approaches are applied as coupled to investigate both the crushing force occurring on broken materials and the reaction forces on toggle plate, drive shaft, support points. Computer aided DEM & FEA approach simulation results are verified with experimental stress measurements applied on prototype crusher.

Results are given in force and gradation graphs and discussed in terms of optimum parameter design.

Keywords

Discrete Element Method, Finite Element Method, Jaw Crusher, Experimental Stress Analysis

Bibliometric Analysis on Authentic Leadership

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Abstract
Studies on school leadership have proven that effective leadership is crucial for improving school outcomes. School leaders have an indirect impact on students' learning performance through their roles in influencing the teachers' attitudes and behaviour outcomes. Leaders with authentic leadership portray good values, lead with integrity, motivate their employees and be transparent with their intention, leading to desirable work attitudes and behaviours. This paper aimed to provide a detailed analysis of bibliometric review on authentic leadership with Publish or Perish software for incorporating the obtained data. Meanwhile, VOSviewer was employed for data visualization, and the Scopus database was utilized to collect all literature in authentic leadership. A total of 706 articles were clarified and evaluated from various authentic and qualified journals starting from 1997 to 2021 (24 years). The studies related to authentic leadership have a significant increase from the earliest 2 in 1997 to 100 articles in 2020. The United States of America, Canada, and United Kingdom made the three most contributions to the literature associated with authentic leadership research, while the top journal was Leadership Quarterly. Findings indicated that the numbers of related research on authentic leadership in the educational field were limited compared to other fields. Therefore, researchers and practitioners should give more attention to developing and improving the research on authentic leadership.

Keywords
Authentic Leadership, Bibliometric Analysis, School Leaders

Sustainable Solutions to Treat Water for Drinking Purposes

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Jose Fabrega, Universidad Technologia de Panama

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Abstract

There is a unique water problem among the communities of Colón along the Caribbean coast of Panama. Although there is an abundance of water and water systems, they are often poorly managed by communities. The water systems, whether they be subterranean well water or water brought from spring or stream sources from the mountains to the south, tend to get contaminated. This contamination further discourages residents to consume the water from the systems, even though they use it for other practical purposes such as bathing and washing. The implications of a contaminated groundwater system can be serious for all in the community and especially vulnerable populations such as infants, the elderly, and the sick. Given the implications of previous research, this study was carried out to better understand the level and type of contamination in the various water sources in the district of Santa Isabel, Colón in the country of Panamá. Field water sample tests were carried out at the source location as well as in a lab in Panama City. Water health education seminars were carried out in communities of the region to educate the populous on safe water management practices, safe decontamination methods, and proper water storage. Creating methods to communicate and implement methods of water treatment were assessed with surveys in the community. The implications of this research will be that the contamination will be better understood by water system authorities, whether from the community, government, or external private interests, and the contamination problem can be dealt with so that the community can benefit from a reliable source of potable water. Theoretical implications of this study are for the interest of the Panamanian science community for further interventions in the region.

Keywords

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The Miracles that Stopped: A Case Study on the Quality Journey of an Organization - Before and After the Pandemic

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Abstract

This case study had been conducted on TQM implementation in a manufacturing company, producing auto parts. Swift Auto parts, based in Chennai, is a tier one supplier, to about 10 companies in South India. The company had obtained ISO certification in 2016. The QMS (Quality Management System) process had helped the company in major ways in terms of increased productivity, better customer satisfaction and profits. The company had a CFT(cross functional team) called as the "Miracle Tribe" (The word "Miracle" denoted the rich outcomes and "Tribe" was chosen to give them employees a sense of belonging and affiliation towards the cause) comprising of members from purchase, marketing, design, production, industrial engineering, HR, systems and quality. The CFT had been successful in driving the company towards continuous improvement and the employees were quite satisfied with the changes. In 2020, due to the pandemic there was a short disruption in production for around 6 months after which the company resumed normal work. The Miracle Tribe suffered a challenge, because most of its members had been replaced. Ms. Deepika was the new production Head and was also given the responsibility to lead the Miracle Tribe. She now has a huge responsibility of getting the entire workforce back on track and she knew the noncooperation was only the tip of the iceberg.

A Software Architecture for an Integrator Payment Service Provider System

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Mehmet S. Aktaş, Prof, Yıldız Technical University

Abstract

When businesses want to pay for the services they offer to their customers in virtual or physical environments with a customer card over a virtual pos, they must make a virtual pos agreement through banks and integrate it into the virtual pos gateway structure of the relevant bank. This situation results in integration and cost efforts. Within the scope of this research, we propose a microservice-based distributed system software architecture that addresses this problem. With the proposed architecture, businesses will only make integration and business agreements with Paycell and position Paycell as a single payment service provider. This way, it will transmit all its payments through the Paycell application. Thus, it will provide both cost and effort savings. The proposed system also provides a Technical integrator service. If the businesses wish, they can also transmit their transactions to a bank they agreed upon through the same integration. This paper discusses implementing this software, which has proven to be modular, scalable, and extendable. Paycell offers a "Mobile Payment" (Direct Carrier Billing) method as an additional alternative to the card payment option with the cooperation of a mobile operator. The card storage service offered by Paycell is also provided together with the proposed solution. In this way, we ensure that the transaction volumes are increased, the customer experience is facilitated, and the structures of the businesses are developed without the need for card storage security requirements in their systems. The system enables end-to-end Business Transaction Management, card information security, revenue sharing, and portal reporting.

Keywords

Payment Service Provider, Technical Integrator Service, Virtual Pos Gateway

A software Architecture for Web-based front-end credit card payment with a webservice call

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Abstract
An application that initiates credit card payment through the android terminal defined on the front-end of the dealer is being designed.
In order to make corporate invoices payments by credit card from our Dealer Web Portal (BWP) screens through our Turkcell dealers and bill payment representatives;
Work will be carried out to integrate web-based BWP screens into the Android POS system, which will be newly designed and developed within Paycell, with the information to be fed by the Dealer Sales System.
After this integration is completed, segmentation will be created by analyzing the data passing through Android POS. A categorization will be created by obtaining the information about which type of payments are made. (single/multiple bill payment, shopping, etc.)
Especially in bill payment data, it is aimed to make collection data predictable, with data such as when payments are made, how long is the deadline for payment, whether reminders are needed.

Keywords
Credit Card Payment , Android POS, Dealer Web Portal, Collection Data Prediction

Different solutions of a vibro-impact system with non-ideal excitation based on the misalignment of frequency response curves obtained by a numerical and analytical analysis

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Abstract

The paper concerns with the analysis of different solutions of a vibro-impact system with non-ideal excitation. The system consists of a non-ideal driving source (limited power supply) in the form of a DC electro motor which is connected by a crank-slider mechanism and a linear spring to a slider which can impact in a fixed wall. The paper presents the physical model, mathematical model of the whole mechanical system including the impact model, short overview of the analytical analysis procedure as the numerical analysis procedure. The mathematical model of the mechanical system is represented as a system of two coupled nonlinear differential equations. The impact model is the inelastic impact model with the coefficient of restitution. Based on the two mentioned method of analysis frequency response diagrams are obtained which indicated discrepancies of the two frequency response curves (solutions) in some regions. Further analysis was conducted which explains the source of the discrepancy and how solutions can be obtained so that the results obtained numerically and analytically are overlapping. Steady state and transient behavior of these solutions is indicated as well..

Keywords

Vibro-impact systems; Non-ideal excitation; Numerical analysis; Analytical analysis

CRM and Loyalty Solution in a Payment Company

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Abstract
Today, many organizations want to benefit themselves and their customers in their later interactions by keeping customer information. In addition, with the legal regulations, organizations want to protect this information within personal data. In addition, organizations should have policies and methodologies to prevent problematic international situations such as "Anti Money Laundering" (AML) in the financial sector. Furthermore, there is a "Know Your Customer" (KYC) requirement to perform transactions with higher amounts in financial transactions. The Paycell CRM (Customer Relationship Management) module that we developed is designed with inspiration from these needs. In the Paycell CRM system, both customer-related demographic data and data required by legal transactions are stored with a convergent data model. The customers' communication can be carried out according to their preferences via the CRM module. Today, institutions working with customers cannot measure their success only with the market share. The important thing is to retain customers for a long time and sell more than one product to the same customer. In this case, the need for a module has emerged to increase customers' loyalty to the company. The LOYALTY module we developed within Paycell is planned to increase the loyalty and interaction of the customer by giving various benefits to the customer. The loyalty module works integrated with the CRM module. The Loyalty campaign management system contains event-based, referenced, lottery, and discount-coupon benefit definitions in the campaign center catalog. In addition, it was ensured that the services of business partners that offer integrated solutions with the Paycell infrastructure work together with the relevant end systems. Our central campaign catalog consists of modules to support a payment company's catalog needs. Another critical topic is providing instant campaigns with complex event processing of customer movements. Here, we aim to offer a campaign focused on the right person by matching the events with data with association rule mining.

Keywords
Know Your Customer, Customer Relations Management, Customer Loyalty, Complex Event Processing, Data With Association Rule Mining

Community Engagement: A Continuing Partnership for Grassroots Main Author Name with affiliation: Rowena T. Albao, Instructor1, Bicol State College o Applied Sciences and Technology

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Abstract

One of the elements of good governance is the partnership of groups that result in benefits for the community. In this study, an institutional community extension project for a grassroots community in Naga City, Camarines Sur, Philippines was evaluated in terms of its processes, effectiveness of training for trainers/facilitators, and level of knowledge gained by beneficiaries after the training. The study used the descriptive method of research and weighted mean as the statistical tool to interpret data. Findings show that the adoption of the Governance Model may be replicated, training of trainers developed competent facilitators and trainers, and the beneficiaries gained high knowledge of Governance and very high knowledge of Entrepreneurial education. The partnership of an educational institution with a non-government organization positively influenced beneficiaries to engage in the extension project and equipped them with knowledge on managing their businesses. Capacitating the trainers on the project processes made them more competent. An improved institutional procurement process and budget allocation for community projects to maintain the level of motivation/participation of the beneficiaries is needed. The team and the NGO's commitment to closely monitor the beneficiaries is highly encouraged. Assessment has to be conducted two years after to determine impact for beneficiaries.

Keywords

Convergence, Evaluation, Outcome, Partnership

Performance comparison of Deep Learning methods: COVID-19 case prediction for Turkey

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Abstract
The World Health Organisation has listed Covid-19 as a pandemic disease in the medical literature. The coronavirus (COVID-19) as a causative agent of respiratory diseases has spread rapidly and affected the whole world. Besides the rapid spread of the disease, alpha, delta, beta, gamma and lastly the omicron variants of the virus have emerged. During the disease progression, countries experienced serious economic, educational and social problems. Everyday life was seriously restricted. Hundreds of people around the world are still losing their lives every day in the fight against the disease that threatens humanity. The study estimates the number of Covid 19 cases for Turkey using Deep Learning. For the analyses, the number of cases between 10 March and 15 May 2021 for Turkey was used. The input data are decomposed into their subcomponents in the study using the Empirical Mode Decomposition (EMD) signal decomposition method. All input data were converted into 2D feature maps to make deep features visible. The pre-trained models GoogleNet, AlexNet, SqueezeNet and AlexNet received this data set. The analysis of the results revealed the model with the highest correlation coefficient (R) and the lowest values for the root mean square error (RMSE) and the mean absolute error (MAE). The accurate assessment of the number of cases will help countries to take action.

Keywords
Covid-19, Turkey, coronavirus, deep learning, forecasting

COVID-19 Case Forecast with Deep Learning LSTM Approach: The Turkey Case

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Abstract
The 21st century coronavirus epidemic (COVID-19) has spread around the world in a short time, claiming hundreds of thousands of lives. Countries have taken immediate action and developed a number of strategies to combat the epidemic. The most important achievement to fight the epidemic has been the discovery of a vaccine. In order to successfully fight the disease, it is of great importance to be able to predict the number of cases. There are many methods for making estimations. Due to their high performance, many studies have recently used deep-learning methods. The study estimated the number of Covid 19 cases for Turkey using the deep learning approach Long-Short-Term Memory (LSTM). We used the daily numbers of cases, deaths and recovered patients in Turkey between 15 March and 10 July 2021. The performance indicators with high correlation coefficient (R) and lowest root mean square error (RMSE) of the LSTM analysis results yielded mean absolute error (MAE) values. Furthermore, the vaccine's impact on the epidemic was analysed using data on vaccination coverage during this period.

Keywords
Machine learning, forecasting, LSTM, COVID-19, Turkey

Papers and Queueing Management Replaced by AI and Voice Banking in a New Branchless World: A Revolutionized Finance Era

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Abstract
Fintech describes the technologies that seek to enhance and automate the delivery of financial services in the finance industry. At its core, fintech is used to help the financial sector better manage its financial procedures and operations by leveraging the specialized algorithms and software used in smartphones and computers. With the constant rise in technological innovations every year, the fintech industry has become the fastest-growing industry in the world. During the coronavirus in 2020, the digital transformation went to new heights as people shifted towards easier options that meet their financial needs. Fintech apps have helped improve customers' access to financial services at their comfort, but their demand is not yet over and continues to increase, further welcoming new technology trends that help to shape the industry. With many people moving towards digital solutions to manage their financial needs, stiff competition among financial institutions is expected to increase. Furthermore, banks and other financial institutions are adopting new ways to improve their banking experience. As a result, they have had to jump on the latest fintech trend to help them sustain a competitive advantage. The paper addresses major fintech trends, including Artificial Intelligence, blockchain, and partnerships, their benefits, and their impact on the finance industry

Keywords
Fintech, Artificial Intelligence, Blockchain, Biometrics, Crypto market, Voice Banking

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