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ESTIMATION FORMULA FOR INDIRECT VALUE REALIZATION OF VIRTUAL MEETINGS

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ABSTRACT

The COVID-19 pandemic has precipitated an urgent and widespread demand for virtual communication solutions, leading to significant growth in the adoption of Unified Communication Solutions (UCS). Despite this expansion, existing methodologies for estimating the realized benefits and their impacts on business productivity remain inadequate, as they fail to encompass all available solutions in the market. Moreover, the substantial costs associated with these solutions often leave companies and enterprises struggling with uncertainties regarding return on investment, primarily due to the absence of a standardized benefit calculation approach. Consequently, there is a pressing need for standardized formula to uniformly calculate the benefits accrued from virtual communications. This paper aims to delineate the critical elements necessary for evaluating the benefits of virtual communications. Building on these foundational elements, a comprehensive formula will be introduced to standardize the assessment of virtual meeting benefits.

KEYWORDS

Virtual Meetings, Unified Communication Solutions, UCS, Realized Benefits, Estimation Formula.

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ESTIMATION OF PERSISTENCE AT A COMMUNITY COLLEGE: A COMPARISON OF ALTERNATIVE MACHINE LEARNING MODELS

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ABSTRACT

This research focuses on developing persistence models for Rio Salado College. It is an initial effort to predict persistence from one term to the next. Several ensemble models are experimented and compared in their respective key metrics such as: confusion matrix, AUC, F1-Score, and feature importance. Exploratory data analysis is undertaken to narrow the set of variables utilized in the models. Two models were considered for possible implementation: a logistic regression and a gradient boosting machine. The former is easier to implement and explain to non-technical personnel, while the latter behaves like a black box. Based on key performance metrics, the model of choice was the gradient boosting machine. Development and testing were conducted with python using jupyter notebooks. The author hopes that this experimental process will fill a vacuum in the analytical needs of community colleges.

KEYWORDS

accuracy, AUC, confusion matrix, ensemble models, feature importance, gradient boosting machines, Machine Learning, persistence, precision, recall

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EMBEDDED SYSTEMS AND SOFTWARE: ENABLING INNOVATION IN THE DIGITAL AGE

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ABSTRACT

This article explores the pivotal role of embedded systems and software in driving technological advancements across various industries. Embedded systems, characterized by their integration into hardware devices and their ability to perform specific tasks with precision, have become ubiquitous in our daily lives. Their applications span across diverse fields such as automotive, healthcare, consumer electronics, and industrial automation. This article delves into the fundamental concepts of embedded systems, highlights their importance, discusses the challenges faced in their development, and explores the latest trends and innovations in embedded software. We are committed to using our findings from this exploration to help others in the embedded systems and software community. We believe that by sharing our knowledge, we can help to accelerate innovation in this field.

KEYWORDS

Embedded systems, Embedded software, Hardware integration, Real-time computing, Internet of Things (IoT).

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MULTI-PATH LIVE VIDEO STREAMING OVER WI-FI DIRECT MULTI-GROUPS KAWAKAMI

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ABSTRACT

This paper proposes a method to realize a reliable live video streaming over mobile ad hoc networks (MANETs) consisting of several Wi-Fi Direct groups. The proposed method uses a multi-path routing with two disjoint routes connecting a source to several subscribers so that if the primary route temporally becomes unavailable, the source immediately switches to the secondary route, which is regarded as a new primary route, and starts the exploration of a new secondary route by invoking a variant of AODV protocol. The result of experiments with twelve Android tablets indicates that it could stably deliver a live video stream of QVGA quality to a subscribing node located at 200 m away from the source node, and quickly recovers from link failures in 100 ms which is significantly shorter than the original AODV.

KEYWORDS

MANET; Wi-Fi Direct; AODV; live video streaming,; connected domatic partition.

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USING VOICE RECOGNITION IN E-LEARNING SYSTEM TO REDUCE EDUCATIONAL INEQUALITY DURING COVID-19

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ABSTRACT

During the COVID -19 pandemic, educational institutions around the world faced problems that have to do with the frustration of students for whom traditional education has been replaced by the online format. Students are experiencing technical difficulties in the digitalization of education. International monitoring of education systems has shown that quite a few countries were ready to move to distance learning, both for technical and economic reasons. The covid pandemic has caused an increase in educational inequality. Elearning systems were expected to reduce inequality in education, but empirical research has shown that learning in this format not only does not reduce, but can increase inequality, increasing the gap in educational outcomes between students with different socioeconomic status. The article describes applications of using voice recognition technology based on artificial intelligence which, by our opinion, may reduce educational inequality during covid-19. We presented a comparative analysis of existing examples artificial intelligence in the educational process. Artificial intelligence uses in specialized software it makes educational process more convenient for both the students and the teachers. There is a description of an application “Academic phrase bank" developed by author. The application consists of two specialising actions for Google assistant. The application allows to increase academic vocabulary, train of creating grammatically correct academic expressions, and memorize templates of academic phrases. In active mode, this application helps to create correct phrases of academic English and improve the abilities of understanding English speech.

KEYWORDS

Academic English, COVID-19, personal assistant, academic publications, applications for learning English

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IOT BASED SMART IRRIGATION SYSTEM BY EXPLOITING DISTRIBUTED SENSORIAL NETWORK

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ABSTRACT

In this research the Internet of Things (IoT) based smart irrigation system is developed for large scale farming to ensure appropriate water management as well as to minimize unnecessary water utilization. This system can control water wastage for irrigation purpose by using wireless sensor network (WSN) and IoT. Each WSN node contains a unit of combined sensors which has been made by several external sensors such as soil moisture, soil pH, and temperature sensor along with Node MCU for data transmission in the cloud. Other nodes are distributed in the field to collect field data for different positions and this information is sent to the server. Data processing and analysis are performed according to the proposed algorithm. Obtained result as well as weather forecasting report is checked for three days from a developed android app. The accomplished result is sent to the farmers through SMS; depending upon the SMS, farmers take necessary steps for watering or not in the crops field through IoT. Using the particular sensors in this system along with microcontroller board plays an important aspect for bringing automation for a particular model. In this work wireless sensor technology in irrigation purposes can show the direction to the rural farming community to replace some of the traditional techniques.

KEYWORDS

Internet of Things (IoT), Weather Forecasting, Android App, WSN and Smart Farming, Threshold value.

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UNLIMITED LENGTH RANDOM PASSWORDS FOR EXPONENTIALLY INCREASED SECURITY

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ABSTRACT

Presented herein is a new method of exponentially strengthening user defined passwords against cracking. The enhanced security is achieved by injecting random strings of random length at random positions in the password string before encrypting and passing the ciphertext resulting after encryption over a network to its destination. Discussed also in detail is how the randomly injected strings are separated and the original password is extracted from the ciphertext. Also explained is how the method can be applied to any other confidential information such as credit and debit card information and cryptocurrency data.

KEYWORDS

Padding, Random String Injection, Ciphertext, Delimiting String, Ciphertext Only Attack, Brute Force Attack, Security Factor

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USING IMAGE PROCESSING TECHNIQUES TO INCREASE SAFETY IN SHOOTING RANGES

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ABSTRACT

Accidents are a leading cause of deaths in armed forces. The Aim of this paper is to minimize the accidents caused using weapons in the armed forces. Developing artificial intelligence technologies aim to increase efficiency more and more wherever people exist. Giving guns to inexperienced, untrained, or unpredictable mentally unhealthy people in shooting ranges used for gun training can be risky and fatal. With the use of image processing technologies in these shooting ranges, it is aimed to minimize the risk of life-threatening accidents that may be caused by this people. Artificial intelligence is trained for the targets to be used in shooting ranges. When the camera of weapon sees these targets, it switches from safe mode to firing mode. When a risky situation occurs in shooting range, the gun turns itself into safe mode with various additional security measures.

KEYWORDS

Image Processing, Shooting Range, Weapon, Safety, Army, Accident, Training.

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APPLYING SOFTWARE ENGINEERING SOLUTIONS TO LAW FIRM MANAGEMENT, NIGERIA AS A CASE STUDY

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ABSTRACT

Legal technology has changed the way law firms are managed worldwide. Substantial research has been undertaken on the role of legal technology in law firm management especially in developed countries. Though, most studies have only focused on the benefits and challenges, and have failed to analyse law firm management areas requiring software solutions. The principal objective of this paper was to investigate the level of technology adoption among Nigerian law firms, as well as to develop a software solution to automate work processes in identified areas. This investigation was done using systematic literature review to gather relevant data on the subject area and identify knowledge gaps. Findings from the research indicated a need for further analysis of the various areas in law practice that could require software solutions. The findings also discussed the implementation of a property management module which is an important contribution to the management of law firms in Nigeria. A speech-to-text transcription feature was also implemented to eliminate the need for lengthy typing.

KEYWORDS

Law firm management, legal technology, property management, speech-to-text.

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COUNTER CHALLENGE AUTHENTICATION METHOD: A DEFEATING SOLUTION TO PHISHING ATTACKS

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ABSTRACT

A counter challenge authentication method is presented for authentication of online users of web applications. The authentication method involves a counter challenge from a user to a web application asking to provide certain information from one or more user details recorded at the time of registration. The user enters his password and logs into the web application only in case the correct answer is received from the web application. This advanced authentication method protects online application users from phishing attacks. An incorrect answer or inability of the web application to provide the correct answer to the challenge is a clear indication of a phishing attack, thereby alerting the user and stopping submission of password to phishers. The authentication method is computer independent and eliminates dependency on two-factor authentication, hardware tokens, client software installations, digital certificates, and user defined seals.

KEYWORDS

Phishing Attacks, Counter Challenge, Social Engineering

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