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Judul Jurnal Ilmiah (Artikel) : Augmented Reality Based Shooting Simulator System To Analysis Of Virtual Distance To Real Distance Using Unity 3D

Jumlah Penulis : 3 orang (Kurniawan Teguh Martono, Oky Dwi Nurhayati, Cahyani Galuhputri Wulwida)

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- c. Vol, No., Bln Thn : Vol.95, No 23, pp. 6359-6368, 15 December 2017
- d. Penerbit : Little Lion Scientific
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Semarang, 16 April 2020

Reviewer 2



Dr. Adian Fatchur Rochim, S.T., M.T.
NIP. 197302261998021001
Unit Kerja : Dept. Teknik Komputer FT UNDIP

Reviewer 1



Dr. Ir. R. Rizal Isnanto, S.T., M.M., M.T.
NIP. 197007272000121001
Unit Kerja : Dept. Teknik Komputer FT UNDIP

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Semarang, 16 April 2020

Reviewer 1



Dr. Ir. R. Rizal Isnanty, S.T., M.M., M.T.

NIP. 197007272000121001

Unit Kerja : Dept. Teknik Komputer FT UNDIP

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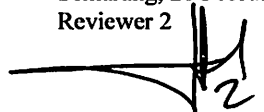
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Semarang, 26 Februari 2020

Reviewer 2



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Augmented reality – based shooting simulator system to analysis of virtual distance to real distance using unity 3D (Article)

Martono, K.T. ✉️, Nurhayati, O.D. ✉️, Wulwida, C.G. ✉️

Diponegoro University, Department of Computer Engineering, Faculty of Engineering, Semarang, Indonesia

Abstract

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The development of computer technology particularly in computer graphics has provided simplicity in doing engineering in any fields. One of the engineerings done is by building a simulation system. Simulation is one of the accurate solutions in learning a very complex problem or in doing an efficiency process towards the cost spent if using a real system. Shooting is one of physical activities involving the brain ability and response of other parts of body. This activity requires a skillful ability in terms of accuracy and acceleration. Shooting is mostly done by army or the community of wild hunters. In the activities of shooting practice, it needs high cost in its implementation in addition to a quite secured location. Augmented Reality (AR) is one of technologies that can be used in the development of shooting simulator system. The built system is by changing the shooting target in the form of virtual object. Thus, this activity can be done in a room without any needs to add the security system. This Augmented Reality Shooting Simulator application is built using the extreme programming method, which consists of Planning, Designing, Coding and Testing steps. The research aims were produced shooting simulator system to measure virtual distance estimation to the real distance. In this research, shooting simulation was created using Augmented Reality. They uses three distinct black and white square markers measuring 20cm x 20cm which will be captured by camera and display in three dimensions virtual object. The research results concluded that light intensity and markers angle affect the virtual distance accuracy. Augmented Reality Shooting Simulator distance estimation gave best results in light intensity range of 10 lux – 30 lux and 0° angle. The other results were estimated virtual range of rifle with target and the number of shots that hit it. © 2005 – ongoing JATIT & LLS.

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Topic: Augmented reality | Virtual reality | Mobile augmented

Prominence percentile: 99.080 ⓘ

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Augmented relity Computer graphic Distance Extreme programming Shooting Simulator

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Martono, K.T. , Eridani, D. , Fauzi, A.

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Marker Image Variables Measurement of Augmented Reality in Mobile Application

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<http://csis.pace.edu/~marchese/DPS/Lect3/dpsl3.html>

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Matsutomo, S. , Manabe, T. , Cingoski, V.
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START: A selective thresholding augmented reality toolkit

Chen, B. , Wu, C.-C. , Huang, Y.-C.
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ISBN: 0769519466
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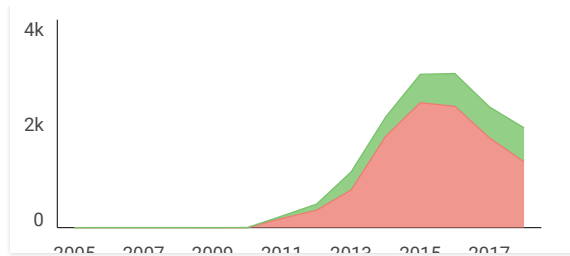
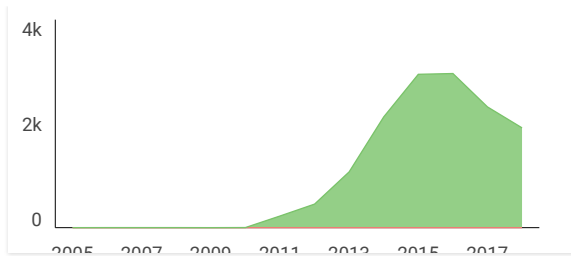
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Bademlik Campus, 26030 Eskisehir, TURKEY.

Dr. YACINE LAFIFI
Department of Computer Science, University of Guelma, BP 401,
Guelma 24000, ALGERIA.

Dr. JAYANTHI RANJAN
Institute of Management Technology, Raj Nagar, Ghaziabad, Uttar
Pradesh, INDIA.

Dr. ADEL M. ALIMI
National Engineering School of Sfax (ENIS), University of SFAX,
TUNISIA.

Dr. SIKANDAR HAYAT KHIYAL
Faculty of Computer Sciences, Preston University, Islamabad,
PAKISTAN.

Dr. ADEL MERABET
Department of Electrical & Computer Engineering, Dalhousie
University, Halifax, CANADA.

DR. HEMRAJ SAINI
CE&IT Department, Higher Institute of Electronics, Bani Walid.
LIBYA.

Dr. MAUMITA BHATTACHARYA
SOBIT, Charles Sturt University, Albury - 2640, NSW, AUSTRALIA.

Dr. SEIFEDINE KADRY
Lebanese International University, LEBONON.

Dr. AIJUAN DONG
Department of Computer Science, Hood College Frederick, MD
21701. USA.

Dr. S.S.RIAZ AHAMED
Mohamed Sathak Engineering College, Kilakarai, & Sathak Institute
of Technology, Ramanathapuram , Tamilnadu, INDIA.

Dr. ZURIATI AHMAD ZUKARNAIN
University Putra Malaysia, MALAYSIA.

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University of Bechar, ALGERIA.

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University of Kuala Lumpur (UniKL) MALYSIA.

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Dr. S. KARTHIKEYAN
Caledonian College of Engineering, OMAN.

Dr. DRAGAN R. MILIVOJEVIĆ
Mining and Metallurgy Institute Bor Zeleni bulevar 35, 19210 Bor,
SERBIA.

Dr. ABDUL AZIZ
Professor of Computer Science, University of Central Punjab,
PAKISTAN.

Dr.P.DANANJAYAN
Professor, Department of ECE, PEC, Puducherry, INDIA.

Dr. E. SREENIVASA REDDY
Principal - Vasireddy Venkatadri Institute of Technology, Guntur,
A.P., INDIA.

Dr. SANTOSH DHONDOPANT KHAMITKAR
Ramanand Teerth Marathwada University, Nanded. Maharashtra
431605, INDIA.

Dr. M. IQBAL SARIPAN
(MIEEE, MInstP, Member IAENG, GradBEM)
Dept. of Computer and Communication Systems Engineering, Faculty
of Engineering, Universiti Putra MALAYSIA.

Dr. E. SREENIVASA REDDY
Principal - Vasireddy Venkatadri Institute of Technology, Guntur,
A.P., INDIA.

Dr. SHAHBAZ GHAYYUR
Department of Computer Sciecn and Software Engineering,
Internaitonal Islamic University Islamabad, PAKISTAN.

Dr. T.C.MANJUNATH,
Professor & Head of the Dept.,Electronicis & Communication Engg.
Dept, New Horizon College of Engg.,Bangalore-560087, Karnataka,
INDIA.

Dr. NACEER EDDINE ZAROOUR
LIRE Laboratory, Computer Science Departement, University
Mentouri of Constantine (UMC), ALGERIA.

Dr. RIKTESH SRIVASTAVA
Assistant Professor, Information Systems, Skyline University P O Box
1797, Sharjah, UAE.

Dr. Mohd Zainal Abidin Ab Kadir,
Centre of Excellence on Lightning Protection (CELP), Dept. of
Electrical and Electronics Engineering, Faculty of Engineering, UPM,
Selangor, MALAYSIA.

Dr. Ousmane THIARE
Gaston Berger University, Department of Computer Science, UFR
S.A.T, BP 234 Saint-Louis, SENEGAL.

Dr. SIDDHIVINAYAK KULKARNI
Graduate School of Information Technology and Mathematics
University of Ballart AUSTRALIA.

Dr. BONNY BANERJEE
Senior Scientist Audigence, FL, USA, The Ohio State University,
Columbus, OH, USA.

Dr. NICKOLAS S. SAPIDIS
Department of Mechanical Engineering, University of Western

Dr. NAZRI BIN MOHD NAWI
Software Engineering Department, Faculty of Science Computer
Information Technology, Universiti Tun Hussein Onn MALAYSIA.

Dr. JOHN BABALOLA OLADOSU
Ladoke Akintola University of Technology, Ogbomoso, NIGERIA.

Dr. ABDELLAH IDRISSE
Department of Computer Science, Faculty of Science, Mohammed V
University - Agdal, Rabat, MOROCCO.

Dr. AMIT CHAUDHRY
University Institute of Engineering and Technology, Panjab
University, Sector-25, Chandigarh, INDIA.

Dr. ASHRAF IMAM
Aligarh Muslim University, Aligarh INDIA.

Dr. MUHAMMAD UMER KHAN
Department of Mechatronics, Faculty of Engineering, Air University,
Islamabad. PAKISTAN.

Dr. MOHAMMED ALI HUSSAIN
Dept. of Computer Science & Engineering, Sri Sai Madhavi Institute
of Science & Technology, Mallampudi, Rajahmundry, A.P, INDIA.

Dr. KHALID USMANI
Department of Computer Science, Arid Agriculture University,
Rawalpindi, PAKISTAN.

Dr. GUFRAN AHAMD ANSARI
Qassim University, College of Computer Science, Ministry of Higher
Education, Qassim University, Kingdom of SAUDI ARABIA.

Dr. DEFA HU
School of Information, Hunan University of Commerce, Changsha
410205, Hunan, P. R. of CHINA.

Dr. IMRAN BABAR
HOD Software Engineering, APCOMS, Rawalpindi PAKISTAN.

Dr. GHADI Abderrahim
Computer Sciences Department, Faculty of Sciences and Techniques,
Ancienne Route de l'Aéroport, Km 10, Ziaten. BP 416. Tanger -
MOROCCO.

Dr. HAMID ALI ABED AL-ASADI
Head of Computer Science Department, Faculty of Education for Pure
Science, Basra University, Basra, IRAQ.

Dr. SAEED ULLAH
Department of Computer Sciecne, Federal Urdu University of Arts
Sciecne and Technology, Islamabad. PAKSITAN.

Dr. MOHAMMAD A. M. ABUSHARIAH
Deputy Dean, King Abdullah II School of Information Technology,
The University of Jordan. JORDAN.

Dr. POUYA DERAKHSHAN BARJOEI
Head of Telecommunication and Engineering, Department of
Computer and Electrical Engineering, Islamic Azad University, IRAN.

Dr. MOHD. MUNTJIR

Departments of Computer Science and Information Technology,
College of Computers and Information Technology, Taif University,
Kingdom of SAUDIA ARABIA.

Dr. AWS ZUHEER YONIS

Communication Engineering Department, College of Electronics
Engineering at Ninevah University, Mosul, IRAQ.

Dr. ASLINA BAHARUM

Software Engineering program, Faculty of Computing and
Informatics, Universiti Malaysia Sabah (UMS), 88400 Kota Kinabalu,
Sabah, MALAYSIA.

Dr. NOEMI SCARPATO

Professor, Telematic University (Università Telematica San Raffaele
Roma), Rome ITALY.

Dr. JABER JEMAI

Associate Professor in Information System at Prince Sultan
University, Kingdom of SAUDIA ARABIA.

Dr. BELAL AL KHATEEB

Head of Computer Science Department in the College of Computer
Science and Information Technology, University of Anbar, Ramadi,
IRAQ.

Dr. FRANCO FRATTOLILLO

Department of Engineering University of Sannio Benevento ITALY.

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| | |
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| Title: | CLASSIFICATIONS, ASSESSMENTS AND CHARACTERISTICS AS FACTORS TOWARDS ANALYZING ORGANIZATIONAL KNOWLEDGE |
| Author: | ZAID A. SABEEH, SMFD SYED MUSTAPHA, ROSHAYU MOHAMAD |
| Abstract: | Knowledge is an intellectual property that is generated and circulated among members in the knowledge-based organization for the ultimate purpose of achieving sustainability and growth of businesses. Both academia and businesses have paid remarkable attention to the multifaceted field of organizational knowledge, such efforts have been, and are still being translated into enormous volume of research work and business reports. Despite the originality of some of these research efforts, there is still a lack for concise roadmaps, models and frameworks that address organizational knowledge based on adequate guidelines. This study aims to explore and synthesize previous literature that discuss the topic of organizational knowledge with the primary objective of guiding this exploration using three factors. These factors are classifications, assessments and characteristics of organizational knowledge which are considered focal points of interest for academia and industries alike. This paper followed the approach of critical analysis for research work that were published and well received by research and industrial communities. The analysis of literature considered 70 scholarly research papers that were published within the period September 2011 until September 2016 to uncover recent patterns and trends in the field of organizational knowledge. The analysis of literature guided by three main factors (classification, assessment and characteristics of organizational knowledge) indicates gaps in these previous studies. These analyses can be used for future studies that are focused more on research in the field of organizational knowledge from the perspective of these three guiding factors. |
| Keywords: | Organizational Knowledge, Classification Of Knowledge, Knowledge Assessment, Characteristics Of Knowledge, Organizational Knowledge Literature, Organizational Knowledge Sharing |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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|------------------|--|
| Title: | AUGMENTED REALITY BASED SHOOTING SIMULATOR SYSTEM TO ANALYSIS OF VIRTUAL DISTANCE TO REAL DISTANCE USING UNITY 3D |
| Author: | KURNIAWAN TEGUH MARTONO, OKY DWI NURHAYATI, CAHYANI GALUHPUTRI WULWIDA |
| Abstract: | The development of computer technology particularly in computer graphics has provided simplicity in doing engineering in any fields. One of the engineering done is by building a simulation system. Simulation is one of the accurate solutions in learning a very complex problem or in doing an efficiency process towards the cost spent if using a real system. Shooting is one of physical activities involving the brain ability and response of other parts of body. This activity requires a skillful ability in terms of accuracy and acceleration. Shooting is mostly done by army or the community of wild hunters. In the activities of shooting practice, it needs high cost in its implementation in addition to a quite secured location. Augmented Reality (AR) is one of technologies that can be used in the development of shooting simulator system. The built system is by changing the shooting target in the form of virtual object. Thus, this activity can be done in a room without any needs to add the security system. This Augmented Reality Shooting Simulator application is built using the extreme programming method, which consists of Planning, Designing, Coding and Testing steps. The research aims were produced shooting simulator system to measure virtual distance estimation to the real distance. In this research, shooting simulation was created using Augmented Reality. They uses three distinct black and white square markers measuring 20cm x 20cm which will be captured by camera and display in three dimensions virtual object. The research results concluded that light intensity and markers angle affect the virtual distance accuracy. Augmented Reality Shooting Simulator distance estimation gave best results in light intensity range of 10 lux 30 lux and 0 angle. The other results were estimated virtual range of rifle with target and the number of shots that hit it. |

Keywords: Simulator, Shooting, Augmented Reality, Extreme Programming, Distance, Computer Graphic

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Title: A HYBRID APPROACH FOR UNSUPERVISED PATTERN CLASSIFICATION

Author: FADOUA GHANIMI, ABDLWAHED NAMIR, EL HOUSSIN LABRIJI

Abstract: In this paper, we present a new data classification approach in an unsupervised context, which is based on both numeric discretization and mathematical pretopology. The pretopological tool, specially the adherence application are used in the modes extraction process. The first part of the proposed algorithm consists of a presentation of the set of the multidimensional observations as a mathematical numeric discrete set; the second part of the algorithm consists in detecting clusters as separated subsets by means of pretopological transformations.

Keywords: Pretopology, Cluster Analysis, Adherence, Pretopological Closure, Unsupervised Classification

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Title: FACIAL EXPRESSION RECOGNITION USING MULTISTAGE HIDDEN MARKOV MODEL

Author: MAYUR RAHUL, NARENDRA KOHLI, RASHI AGARWAL

Abstract: Facial Expression Recognition is an application used for biometric software that can be used to identify special expressions in a digital image by comparing and analysing the different patterns. These software are popularly used for the purpose of security and are commonly used in other applications such as home security, human-computer interface, credit card verification, surveillance systems, medicines etc.. Recognizing faces becomes very difficult when there is a change occurs in facial expressions. In this paper two layer extension of HMM is used to recognize continuous effective facial expressions. Gabor wavelet technique is used for feature extraction. Two layered extension of HMM consists of bottom layer which represents the atomic expression made by eyes, nose and lips. Further upper layer represents the combination of these atomic expressions such as smile, fear etc. In HMM, Baum-Welch method is used for parameter estimation. Viterbi Method and Forward Procedure are used for calculating the optimal state sequence and probability of the observed sequence respectively. This proposed system consists of three level of classification. Output of the first level is used for the training purposes for the second level and further this level is used for the third level for testing. Six basic facial expressions are recognised i.e. anger, disgust, fear, joy, sadness and surprise. Experimental result shows that Proposed System performs better than normal HMM and has the overall accuracy of 85% using JAFFE database.

Keywords: JAFFE, Gabor Wavelets Transform, PCA, Local Binary Patterns, SVM, Faps, Cohn-Kanade Database, Markov Process, Static Modelling

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15th December 2017 -- Vol. 95. No. 23 -- 2017

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Title: HEART RATE REGULATION BASED ON T-S FUZZY CONTROLLER

Author: FOROUGH. PARHOODEH, HAMID MAHMOODIAN

Abstract: The control of human heart rate (HR) during exercise is an important issue for athletics and assessing physical fitness, weight control, cardiovascular patients and the prevention of heart failure. A T-S type fuzzy model for a nonlinear model of (HR) response that describes the central and peripheral local responses during and after treadmill exercise is constructed and followed by designing a fuzzy controller based on parallel distributed compensation (PDC) method. The state variable is reconstructed using a T-S fuzzy observer. Linear matrix inequality (LMI)-based and Takagi-Sugeno (T-S) model-based fuzzy approach is applied. To relevant simulations are made to verify the effectiveness of this proposed fuzzy controller.

Keywords: Heart Rate (HR), T-S Fuzzy Model, T-S Fuzzy Controller, T-S Fuzzy Observer, Tracking Error

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| Title: | TOWARD SECURE COMPUTATIONS IN DISTRIBUTED PROGRAMMING FRAMEWORKS: FINDING ROGUE NODES THROUGH HADOOP LOGS |
| Author: | N. MADHUSUDHANA REDDY, Dr. C. NAGARAJU, Dr. A.ANANDA RAO |
| Abstract: | MapReduce programming paradigm is used to process big data in large number of commodity computers where parallel processing is leveraged. In this kind of programming phenomenon, users do not have control over distributed computations. Therefore it is quite natural for users having privacy and security concerns. The nodes involved in MapReduce computations may become malicious and cause security issues. Different attacks are possible on distributed environment. The nodes that cause such attacks are known as rogue nodes. In this paper a methodology is proposed based on analysis of Hadoop log files to find rogue nodes that are malicious and launch attacks for disturbing normal functioning of MapReduce framework. In other words, the methodology aims at integrity verification of computations in MapReduce environment. This is achieved without having any cryptographic primitives or other computational operations. Hadoop logs and low-level system calls are utilized and correlated in order to obtain operations performed by different nodes. This knowhow is then matched with system calls and invariants in program to find out malicious operations and the rogue nodes that cause such operations. The proposed methodology is evaluated with real Hadoop cluster environment to demonstrate proof of the concept. The empirical results revealed the significance of using this approach towards secure computations in distributed programming frameworks while processing big data. |
| Keywords: | Mapreduce, Hadoop, Detection Of Rogue Worker Nodes, Hadoop Logs, System Calls |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | IMPROVED APPROACH TO IRIS SEGMENTATION BASED ON BRIGHTNESS CORRECTION FOR IRIS RECOGNITION SYSTEM |
| Author: | ABDUL SALAM H. AB., TAHA M. H., NAJI M. S., ALI H F |
| Abstract: | With the increasing need for security systems, security and the authentication of individuals become nowadays more than ever an asset of great significance in almost every field. Iris recognition system provides identification and verification of an individual automatically based on characteristics and the unique features in iris structure. The correct iris recognition system based on the iris segmentation method and how controlled the inner and outer boundaries of iris that can be damaged by irrelevant parts such as eyelashes and eyelid. To achieve this aim, in this paper basically explains the proposed segmentation method [Iris Segmentation Based on Brightness Correction ISBC] by addition two brightness FB(First Brightness) and SB(Second Brightness), which applied on an eye image passed through preprocessing operations to implement this algorithm in C# Programming Language, with a new modifications in iris segmentation stage. The proposed approach testing conducted on the iris CASIA (Chinese Academy of Science and Institute of Automation) dataset (CASIA v1.0 and CASIA v4.0 interval) iris image database and the results indicated that proposed approach has 100% accuracy rates with (CASIA v1.0) and 100% accuracy rates with (CASIA v4.0 interval). |
| Keywords: | Iris Segmentation, Brightness Correction, First Brightness Correction, Second Brightness Correction, CASIA. |
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| Title: | GLOBAL FEATURES WITH IDENTICAL TWINS BIOMETRIC IDENTIFICATION SYSTEM |
| Author: | BAYAN OMAR MOHAMMED, SITI MARIYAM SHAMSUDDIN |
| Abstract: | Studies in pattern recognition domain currently revolve around twins biometric identification. The twins biometric Identification system may lead to the discovery of a distinguishing pattern of a biometric of an individual. A significant improvement can also be seen in the Unimodal biometric identification, it allows accurate and reliable identification of identical twins with good performance of certain traits. However, since the similarity level is very high, Identical twins identification is much more difficult when compared to that of non-twins. Hence, the use of more than one biometric trait with global features is proposed. Further, pattern recognition requires the extraction and selection of meaningful features, which leads to the key issue in the identification of twin handwriting-fingerprint, that is, the question of how to acquire features from many writing and styles twin handwriting-fingerprint to enable the reflection of the right person between twins. This study thus proposes the global with Aspect United Moment Invariant for global feature extractions with the application of identical twin multi-biometric identification with Inter-class and Intra-class . |

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| Keywords: | Identical Twin, Global Features, Multi-Biometric, Identification, Unique Representation, Aspect United Moment Invariant, Similarity. |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | EFFECTS OF ELECTRONIC COMMUNICATION TOOLS AS MODERATING VARIABLES ON TACIT KNOWLEDGE ELICITATION IN INTERVIEW TECHNIQUES FOR SMALL SOFTWARE DEVELOPMENTS |
| Author: | NAUMAN AHMAD, JOAN LU, IBRAHIM DWEIB |
| Abstract: | Interviewing is an important technique and initial step, during the process of software development, and due to its simplicity and awareness with the participants, it is largely used to conduct the detailed exploration during the process of requirements elicitation, but it is widely accepted that the experts face problems in collecting the tacit knowledge, which can interrupt the process of interviewing. In this paper, we have tested a proposed framework, to use the electronic communication tools, Audio Podcasts, E-mails, Chatting (Online Chat Sessions) and Hybrid (Combination of Podcasts + E-mails + Online Chatting), to discuss the detailed interview agenda, between the interviewer and interviewee, before the process of interviewing, for the semi-structured interviews. This study has used mixed methods. Firstly, the research has utilized the collected, quantitative data for testing the hypothesis to compare the difference of effects among all the e-tools, and secondly, after using these e-tools, evaluations have been done to find the difference of outcomes, through the qualitative data, collected via semi-structured interviews. Results suggest that the use of these electronic communication tools as moderating variables have strong impact on effectiveness. The findings are adequate to encourage further research work, and the outcomes have proved to be of great interest for the software specialists. Several recommendations have been given for the future research work. |
| Keywords: | Electronic Communications, Interviewing, Interview Agenda, Requirements Elicitation, Semi-structured interviews, Tacit Knowledge. |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | A NEW METHOD FOR ANALYZING CONGESTION LEVELS BASED ON ROAD DENSITY AND VEHICLE SPEED |
| Author: | M.D. ENJAT MUNAJAT , DWI H. WIDYANTORO , RINALDI MUNIR |
| Abstract: | Congestion remains as an important issue to date, and it is continuously investigated by experts in order to find solutions in the process of information dissemination to road users. The existing research was more concerned on detecting vehicles and road rather than congestion, thus there has been no clear definition of congestion offered. What really happened was that vehicle accumulation will always be referred to as congestion, although it is not necessarily the case, thus the information about congestion condition becomes inaccurate. Moreover, the existing research mainly viewed the vehicle speed aspect as the basis of congestion level estimation. Other researchers used GPS and probe detectors, but there has been much limitation despite such equipment. On average, the research carried out was only focused on the number of vehicles at a given frame as the basis for density/congestion calculation. In fact, congestion is also determined by road density and vehicle speed in a given period. Therefore, it is necessary to find a way that can display the information about road condition and congestion in a factual, timely manner. In this paper, we present two novel methods in the context of congestion detection employing information about road density and vehicle speed. Road density defines the extent to which road area is occupied by vehicles, while vehicle speed sees how fast vehicles pass a given frame. Thus, the information of both helps define the levels of vehicle congestion on a road. Based on the experiment conducted on an in-city road, this method was found to be accurate in defining the levels of congestion, starting from light, jam to heavy-jam traffic. To corroborate the argumentation of the congestion conditions, calculation using Fuzzy model was conducted given that the congestion levels are not measurable in an exact manner (light (macet ringan), jam (macet sedang), heavy-jam (macet berat) and total traffic gridlock (macet total)), thus the information obtained is more accurate. The method developed does not require high cost, yet it is quite effective in presenting congestion information in a quick, real-time, accurate way. |
| Keywords: | Traffic Congestion, Vehicle Detection, Vehicle, Tracking, Vehicle Density, Vehicle Speed Detection, Image Processing |
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| Title: | DETERMINANT FACTORS OF CYBERBULLYING: AN APPLICATION OF THEORY OF PLANNED BEHAVIOR |
| Author: | HOSEIN JAFARKARIMI, ROBAB SAADATDOOST, ALEX TZE HIANG SIM, JEE HEE MEI |
| Abstract: | Employing the Theory of Planned Behavior (TPB), this study aims to find determinant factors that have influence over individuals intention to cyberbully others. Along with the TPBs main variables, including attitude, subjective norms and perceived behavioral control, in this research, the role of moral obligation, perceived threat of legal punishment and overall gain was also studied. Using a scenario-based questionnaire, the data were collected from 96 students in Universiti Teknologi Malaysia. According to the results, subjective norms and overall gain reflected to be significant over cyberbullying intention, while the rest of variables did not reflect any significance. The impact of these determinants was not the same among females and males, which reflect gender differences matters in intention to cyberbully. |
| Keywords: | Cyberbullying, Cybercrimes, Theory of Planned Behavior, Computer Ethics |
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| Title: | DESIGN AND VALIDATION OF INFOSTRUCTURE MATURITY MODEL SURVEY THROUGH RASCH TECHNIQUES |
| Author: | ALIZA ABDUL LATIF, NOOR HABIBAH ARSHAD, NORJANSALIKA JANOM |
| Abstract: | Disaster in Malaysia originated from either natural causes or manmade reasons. It can bring catastrophic impact to a nation, in terms of human, economic or environment. Disaster management essentially relies heavily on information where all agencies involved need to ensure proper information is being disseminated in the event of a disaster. Information is needed in ensuring an effective disaster relief efforts. Hence, this paper aims to design and validate an instrument which measures the infostructure used in disaster management from three dimensions, Coordination, Communication and Control, namely the 3Cs. The instrument validation involved three (3) stages: (i) content validity, (ii) expert validation, and (iii) pilot test using Rasch Model with winstep software. This study proved that twenty-two (22) respondents are balanced for responding to fifty-seven (57) items in Rasch measurement model. |
| Keywords: | Coordination; Communication; Control; Rasch Analysis |
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| Title: | TOWARD A SURVEY INSTRUMENT FOR INVESTIGATING CUSTOMER KNOWLEDGE MANAGEMENT IN SOFTWARE COMPANIES |
| Author: | ARASH KHOSRAVI, AB RAZAK CHE HUSSIN, HALINA MOHAMED DAHLAN |
| Abstract: | This paper presents a method of developing an instrument for Customer Knowledge Management (CKM) in Enterprise Software (ES) development. Knowledge-Based View (KBV) and Theory of Technology in a Generic CKM framework were used to demonstrate the Organizational, Human, and Technological factors that enable the CKM process. Human, Organizational and Technological CKM enablers were identified from the literature. The weight and priority of these factors were determined by experts from the ES development companies. Based on the high priority factors, we hypothesized the constructs and develop measurement items to be validated. The measurement items are adopted from the previous validated sources. The instrument was evaluated using content validity and a pilot study. A Content Validity Index (CVI) approach was used to validate the instruments in term of relevancy and simplicity. During the content validity, the number of measurement items was reduced from 50 to 46. Moreover, the survey questionnaire of this study can be used as the foundation for the development of policy as well as strategy to enhance the probability of successful implementing the CKM. |
| Keywords: | Customer Knowledge Management (CKM), Customer Relationship Management, Knowledge Management, Software Quality, Content Validity Index, Pilot Study, Survey Questionnaire Development |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | NATIONAL CYBER SECURITY STRATEGIES FOR DIGITAL ECONOMY |
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| Author: | CHOOI SHI TEOH, AHMAD KAMIL MAHMOOD |
| Abstract: | Digital economy is strengthening in prominence and relevance in the era of increasingly connected world in the cyberspace. The boom in digital economy, however, is coupled with cyber threats and cyber risks for nations in the form of malware, escalating organized cybercrime, personal information and data breach, and Advanced Persistent Threat (APT). As such, nations need to prepare for the cyber threats from new frontiers namely Internet of Things (IOT), mobile and cloud technologies. National cybersecurity strategy (NCSS) is an essential element as cybersecurity is needed to protect and enable digital economy. This article seeks to gain insights on the relationship between the development of the NCSS and the success of digital economy of the nation based on literature from journal articles, global reports, current industry happenings and market trends. NCSS of nine nations were analyzed centered on digital economy success. Interestingly, it was found that the readiness of nation to reap digital economy is not correlated to the development and publication of the nations NCSS. In order for digital economy to thrive, the digital confidence of the stakeholders should be high. Nations with high digital confidence depend less on the national level NCSS to strengthen the trust and confidence in digital space. Nevertheless, the NCSS is still a need as a foundation for long term strategy to cement the cybersecurity of the nation, as cyber threats and risks keep evolving and will remain a challenge. A country like Singapore is intensifying its efforts and commitment in national cybersecurity. The existing top ten nations in digital economy has NCSS providing the necessary foundation for digital economy to flourish further. Though a NCSS is not a requirement for nation to begin digital economy, NCSS is a requirement for a nation to continuously develop and to be successful in digital economy. |
| Keywords: | Cybersecurity, Digital Economy, National Cybersecurity Strategy, Critical Infrastructure, Cybercrime |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | IMAGE ENCRYPTION USING ENHANCED FOUR STAGE ENCRYPTION |
| Author: | SANGAPU VENKATA APPAJI, DR. GOMATAM V S ACHARYULU |
| Abstract: | Secure communication for the information is very important role in digital era. There are several encryption techniques introduced to communicate the data from one location to the other. In digital communication, the images are encrypted using several techniques. In this paper, an encrypt scheme to encrypt bit map images is proposed using enhanced four stage encryption. Different analytic studies are performed on the images for finding the traces of the original image in the encrypted image. Comparative studies are performed on different encrypted images of the same image to trace back the original image. The results show that no patterns of the original image found in the encrypted image. |
| Keywords: | plain text, cipher text, bit map images, cipher images, four stage encryption. |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | TEXTUAL ANALYSIS FOR DEVELOPING FUZZY COGNITIVE MAPS - THE CASE OF STRATEGY MAPS |
| Author: | PETR HAJEK, PIOTR PACHURA, ONDREJ PROCHAZKA, JAN STEJSKAL |
| Abstract: | Expert opinions have been applied to construct fuzzy cognitive maps (FCMs) to support the process of strategic planning. FCMs are beneficial tool to represent strategy maps due to their capacity to model causal-effect relationships among the key strategy concepts. To overcome the problem of rather subjective expert evaluation of the relationships, automatic knowledge acquisition is preferable. Moreover, the causal-effect relationships evolve dynamically and are context-specific. Here, the knowledge acquisition is performed to obtain knowledge on causal strategic concepts. This knowledge is extracted from strategic documents. This approach has two major steps. First, latent semantic analysis is employed to obtain an interpretable semantic model. Second, collocated causal concepts are used to model relationships among strategic concepts. This approach also requires theoretical background literature/domain experts to determine the direction of the causalities. The generated FCMs can subsequently be used to simulate the effects of strategic management and, thus, provide an effective decision support tool. Several innovation strategies of regions for two periods are used as a case study. To verify the proposed approach, it is demonstrated that the generated FCMs are consistent with expert opinions and fuzzy ANP method. The analysis of the dynamic evolution of the FCMs also shows how strategic priorities change over time. |
| Keywords: | Fuzzy cognitive map, Business strategy, Textual analysis, Innovation strategy |

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| Title: | HYBRID HAND-DIRECTIONAL GESTURES FOR BAIOMETRIC BASED ON AREA FEATURE EXTRACTION AND EXPERT SYSTEM |
| Author: | FAHAD LAYTH MALALLAH, BARAA T. SHAREF, ASO MOHAMMAD DARWESH, KHALED N. YASEN |
| Abstract: | Nowadays, biometric authentication researches are becoming one of the major focuses among researchers due to various fraud attempts are taking place. Although, several authentication operations are available, these are not free of defects that affect negatively on the authentication operation. Therefore, a novel technique is proposed using index-finger of a hand in order to point out random directions such as up, down, left, or right. Accordingly, a new feature extraction based on area of the index-finger is proposed. It is hybrid between static and dynamic hand directional gesture recognition having advantage that is not forgettable as password due to biologically that this gesture is stored in the brain as visual memory type. This method starts by recording a video around 2-10 seconds as time duration, and then frames are processed one by one to output 4-set-direction, which are deemed as passwords for an individual. Later on, extracted gesture direction vector is matched against the stored one, to output either accept or reject status. Experiments were conducted on 60-video frames were prepared for training and testing recorded from 10 individuals. Result findings demonstrate high successful recognition rate as the performance accuracy is 98.4% of this proposed method. |
| Keywords: | Biometrics, Hand Gesture, Pattern Recognition, Feature Extraction, Expert System, Computer Vision, Data Science. |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | DATA-DEPENDENT IN ROLE-BASED GOAL MODELING |
| Author: | ROHAYANTI HASSAN, NOR ASHILA ABDUL RAHMAN, RAZIB M. OTHMAN, WAFAA ABDULLAH |
| Abstract: | Role-based goal modeling demonstrates an improvement on stakeholders' role representation and its data element in modeling a system to-be. Since the requirements might be contributed from multi stakeholders, several goals are possible to rely on similar sources of requirements. In another scenario, other stakeholders may interact with the outcome from other sub goals, where this demonstrates the occurrence of dependency. Dependency implies different feasibility and adequacy of each goal and sub goal. Data dependency happens when the data can either be an input or output from one goal to another goal. Consequently, the data has been changed or intervened from one goal to another. This paper discusses the integration of data element into role-based goal modeling from the aspect of: (i) how to form the data dependency in role-based goal realization graph and (ii) how to assess the new formation in terms of feasibility and adequacy. The conflict and priority of the data dependency will be determined in order to estimate the complexity and risk along the process. This new improvement of goal modeling will be validated using a real case study taken from Plant Integrated System. |
| Keywords: | Multi stakeholders, Stakeholders role, Data dependency, Complexity, Risk |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | ANALYSIS OF MOVING AVERAGE AND HOLT-WINTERS OPTIMIZATION BY USING GOLDEN SECTION FOR RITASE FORECASTING |
| Author: | MEDY WISNU PRIHATMONO, EMA UTAMI |
| Abstract: | Moving average and exponential smoothing holt winters is a method for forecasting calculations of some existing statistical and computational method. The selection of two methods in this research is based on ritase data from January 2013 December 2015 to view the average, trend and seasonal pattern that will occur in one period of future forecasting research. However, the weakness from Exponential Smoothing Holt Winters is the determination for initial values (α , β , & γ) are inputted with trial value from 0 to 1 which may not yield maximum results. Golden section method is added in this research to assist the optimum determination for initial values (α , β , & γ) from Exponential Smoothing holt Winters to produce the accurate results. This research aims to know the forecasting model for the amount of income ritase at Department of transportation Yogyakarta UPT Giwangan terminal management with Exponential Smoothing holt Winter's and moving average. |

Furthermore, to know the comparison of forecasting results with both methods. To obtain the right method, the measuring instrument is needed to detect the accuracy of the prediction value, while the one used in this research is the mean absolute percentage error (MAPE), mean square deviation (MSD) and Mean Absolute Deviation (MAD). The determination of forecast value and selection of MAPE, MSD, and smallest MAD is using the two methods above. The results of data analysis shows that Exponential Smoothing Holt Winters is considered as the right method for the amount of ritase income at Department of Transportation, city of Yogyakarta - UPT Management of Giwangan Terminal because it produces the smallest value of MAPE = 4%, MSD = 446841 and MAD = 496.

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| Keywords: | Forecasting, Golden Section, Exponential Smoothing Holt Winters, Moving Average |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | AN EFFICIENT RADAR SIGNAL DENOISING FOR TARGET DETECTION USING EXTENDED KALMAN FILTER |
| Author: | JAMI VENKATA SUMAN, JOSEPH BEATRICE SEVENTLINE |
| Abstract: | Nowadays target detection and tracking play a vital role in the field of aeronautical, spacecraft, wild area, Marine Corps, underwater scenario and so on. In the target detection, Radio Detection and Ranging (RADAR) signal is transmitted and the reflected signal has status of target information. In this paper the performance of radar signal generation and radar target detection (RTD) models simulated using MATLAB Simulink is discussed. The implementation of Extended Kalman Filter (EKF) using Register Transfer Level (RTL) Verilog-Hardware Description Language (HDL) and their analysis using for the Field Programmable Gate Array (FPGA) implementation in Xilinx tool and the Applications Specific Integrated Circuit (ASIC) implementation in cadence encounter tool with 180nm and 45nm library technologies are also presented in this paper. The Root Mean Square Error (RMSE) and Signal-to-Noise Ratio (SNR) values are evaluated by using MATLAB Simulink. On FPGA analysis, LUT, slices, flip flops, frequency and ASIC implementation area, power, delay, Area Power Product (APP), Area Delay Product (ADP) is improved in proposed EKF-RTD method than conventional methods. |
| Keywords: | RADAR, MATLAB Simulink, Extended Kalman Filter, Radar Target Detection, RTL, HDL, Xilinx, FPGA, Cadence, ASIC. |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | MULTI-OBJECTIVE GENETIC ALGORITHMS FOR THE GREEN VEHICLE ROUTING PROBLEM: A COMPARATIVE STUDY |
| Author: | JABER JEMAI, MANEL ZEKRI, KHALED MELLOULI |
| Abstract: | The Green Vehicle Routing Problem (GVRP) is an extension of the standard VRP taking into account the awareness of companies and governments of the dangerous effect of gases emissions. The primary objective of the GVRP is to minimize the volume of emitted carbon dioxide (co2) in adding to the optimization of the traveled distance and other functional objectives. In this paper, we model the GVRP as a bi-objective optimization problem for which many solving algorithms can be adapted and applied including deferent variants and extensions of Multi-Objective Genetic Algorithms (MOGAs). We select three elitist MOGAs: Non-dominated Sorting Genetic Algorithm II (NSGA-II), Strength Pareto Evolutionary Algorithm - II (SPEA-II) and the Indicator-Based Evolutionary Algorithm (IBEA) to evaluate the quality of the returned Pareto fronts using deferent metrics: computation time, traveled distance, emissions volume, generational distance, spacing, entropy, and contribution. The comparison is performed on a set of standard benchmark problems. The experimental results show that IBEA outperforms other algorithms over many metrics. |
| Keywords: | Green Supply Chain, Green Multi-Objective VRP, Multi-Objective Genetic Algorithms |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | LOCATION-AIDED LEVEL BASED DISJOINT MULTIPATH ROUTING (LLDMR) ALGORITHM |
| Author: | V.MUTHUPRIYA, S.REVATHI |
| Abstract: | The routing in a dense causes more routing overhead and end-to-end delay because of the broadcast storm problem and frequent link failure in the network. In mobile ad hoc networks, the broadcast of the Route Request (RREQ) packet among the nodes increases |

along with the increase in network size, which results in routing overhead. Similarly, in these networks, the rate of link failure increases with node speed and so the single path routing protocols reinitiate the route discovery phase to find a new path whenever there is a link breakage, which finally results in more end to end delay in the network. Though several reactive multipath routing protocols were been introduced to overcome this problem, it uses more RREQ broadcasting to identify multiple paths. Recently more location based routing schemes have been proposed in order to minimize these broadcast problem, but they are not scalable for large ad hoc networks. In this paper, Location-aided Level based Disjoint Multipath Routing (LLDMR) algorithm is proposed, which finds multiple node-disjoint paths between source and destination with minimum flooding of control messages. In the proposed algorithm, the RREQ broadcast occurs only within inter-link nodes to minimize control packet overhead. Also, the algorithm predicts the link failure by comparing the nodes threshold value with links threshold value and accordingly it switches to alternate path even before the link failure occurs. The performance of LLLDMR is analyzed using NS2 simulator by varying its network size and speed. The simulation results are compared with existing non-location based multipath routing protocol AOMDV and location based routing protocol, location aided route discovery mechanism based on two-hop neighbor information(TN-CMAD and TN-CRDN).. Also the simulation results show that the proposed system has a higher packet delivery ratio, a minimum of control packet overhead and a reduced end to end delay than the existing protocols, AOMDV, TN-CMAD and TN-CRDN.

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| Keywords: | Location-Aided Routing (LAR), Location-aided Level based Disjoint Multipath Routing (LLDMR), Node-disjoint paths, Inter-link node, Nodes and levels threshold value |
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| Title: | PQ EVENT DETECTION AND CLASSIFICATION BASED ON DUAL TREE COMPLEX WAVELET AND COARSER-FINE TWO STAGE ANN CLASSIFIER |
| Author: | PRATHIBHA, MANJUNATH, CYRIL PRASANNA RAJ |
| Abstract: | Dual Tree Complex Wavelet Transform (DTCWT) is shift invariant and has 2m redundancy as compared with Discrete Wavelet Transform. In this paper, DTCWT is used to obtain non-redundant sub bands energy levels representing PQ events in different and unique sub bands. The sub bands are quantized and thresholded to retain 95% of information that will improve classification process. Two stage FFNN architecture is designed to classify six possible PQ events by performing coarse and fine classification process. The two stage classifier with 10 neurons in each FFNN architecture and 4 neurons in the second stage achieves 97.5% of classification accuracy. The develop algorithm is suitable for real time applications in smart meters. |
| Keywords: | PQ event, DTCWT, Neural Network, Two Step Classifier, Smart Meter |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | BANN: A NOVEL INTEGRATION OF SECURITY WITH EFFICIENCY USING BLOWFISH AND ARTIFICIAL NEURAL NETWORKS ON CLOUD |
| Author: | JOHN JEYA SINGH.T, DR E.BABURAJ |
| Abstract: | Multimedia data security and storage space allocation on cloud servers is a matter of concern for many CSPs and also has a vast scope for research. Media files generally are encrypted and stored on storage servers due to various security threats. Though recent advancements are in mass storage density of servers and high speed processors have provided a little relaxation to CSPs but still with their limited storage capacity and heavy usage of services by users globally, these storage servers usually pave way for high memory allocations for media files resulting in lack of server space. We argue that uncompressed media such as images take more storage space compared to compressed files and also consume more time for cipher operations, which results in poor performance and considerably high bandwidth usage for operations. We propose a combination of Blowfish encryption algorithm with Artificial Neural Networks to provide an efficient way to store and process media files on servers. We have evaluated the performance of proposed work and compared it in terms of PSNR, compression ratio, mean square error, average difference, maximum difference and normalized absolute error and time efficiency during cipher operations. Through these experimental results we prove the efficiency of system which increases dramatically using BANN technique. |
| Keywords: | Cloud Computing, Cloud Storing, Cloud Retrieval, Neural Networks, Compression |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | LOAD BALANCING METRIC BASED ENERGY CONSUMPTION IN WIRELESS MESH NETWORKS |
| Author: | NAIMA EL HAOUDAR, ABDELLAH ELHADRI, ABDELILAH MAACH |
| Abstract: | Load balancing and energy consumption have become important criterions for evaluating a Wireless Mesh Networks performance. The progress of technology and smart devices has been put up in a rapid way recently. Despite its advantages, it has some drawbacks, for example increase of energy consumption in the worldwide. In our paper, we propose a load balancing routing metric based energy consumption. The aim of our metric is to minimize the energy consumption and balance the nodes traffic in the network, by comparing the traffic load and energy value of each node with a standard threshold value. For that, we evaluate the traffic load and energy value of each node and all its neighbors. We evaluate the performance of our routing metric, comparing it with others existing routing metrics, using simulator tool NS2. We find that our new routing metric achieves the minimum energy consumption. |
| Keywords: | WMNs; Energy Consumption; Load Balancing; Performance. |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | TOWARDS AN AUTOMATIC GENERATION OF NEURAL NETWORKS |
| Author: | MAHA MAHMOOD, BELAL AL-KHATEEB |
| Abstract: | The automatic generation of neural network architecture is a useful concept that is used in many application areas despite the optimal architecture not being known a priori. Therefore, trial and error is often performed before a satisfactory architecture is found. Construction deconstruction algorithms can be used as an approach, but they have several drawbacks. Usually this approach is restricted to a certain subset of network topologies and as with all hill climbing methods, they often get stuck at local optima and may therefore not reach the optimal solution. In order to overcome these limitations, an evolutionary computation as an approach to the generation of neural network structures is used. The aim of this paper is to design an automatic generation of neural networks architecture that performs random operations within hidden layers. Associated operations include generating layer, add node, delete layer, delete node and keep the architecture with no change, at which all the weights are initialized randomly. These neural networks are able to adapt themselves with the reality, learn from the training of the various applications and adapt their architecture depending on the uses of the application. The automatically obtained neural network architecture is much better than all other architectures that are found during the evolutionary process. This network is tested in the game of tic tac toe and is played against selected tic tac toe computer programs and against selected human players and the obtained results are promising, suggesting many other research directions. |
| Keywords: | Neural Network, Evolutionary Algorithms, Genetic Programming, Genetic Algorithms |
| Source: | Journal of Theoretical and Applied Information Technology 15 th December 2017 -- Vol. 95. No. 23 -- 2017 |

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| Title: | APPLICATION OF FUZZY MULTI-OBJECTIVE METHOD FOR DISTRIBUTION NETWORK RECONFIGURATION WITH INTEGRATION OF DISTRIBUTED GENERATION |
| Author: | RAMADONI SYAHPUTRA, INDAH SOESANTI |
| Abstract: | This paper proposes an application of fuzzy multi-objective method for distribution network reconfiguration with integration of distributed generation (DG). The method transforms the multi-objectives of the configuration optimization problem into a single objective problem using theory of fuzzy set. In fuzzy set, each objective of optimization is associated with a membership function. The function represents the level of satisfaction of the objective. There are four objectives which are formed in fuzzy membership function including minimum power loss, maximum branch current loading, maximum bus voltage magnitude and load balancing the entire feeders of electric power distribution network while a radial structure must be maintained. In this work, the fuzzy multi-objective method has been applied in optimization of an IEEE 77-bus distribution network configuration with integration of DG. The results show that efficiency of the network is improved significantly. |
| Keywords: | Fuzzy Multi-Objective; Optimization; Distribution Network; Distributed Generation. |
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| Title: | FAST TWO DIMENSIONAL DIGITAL FILTER DESIGN BASED ON FAST FOURIER TRANSFORM |
| Author: | MUZHIR SHABAN AL-ANI |
| Abstract: | Digital signal processing (one dimension or two dimension) is one of the most powerful field that will shape 21st century science, engineering and technology. The field of digital filter design becomes an important issue for their wide range of applications. Consequently two dimensional (2D) filter design plays is an important field of processing that have direct application on digital image processing. The main objective of this work is to design an efficient fast 2D digital filter, in which can be implemented via fast Fourier transform. The motivation of this approach is concentrated on the efficient high speed digital filter design. To achieve this target the digital 2D digital filter is implemented to avoid the raised problems. The implemented approach gives an accurate design to select filter type and size according to their application. Good performance in filtering operation and processing time are achieved in testing the implemented approach. The processing time gain is increasing rapidly according to the increasing in the filter size comparing with the direct convolution. |
| Keywords: | 2D Filters, Filter Design, Real Time Filters, FFT, and 2D Convolution |
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