Study on the Factors that Increase the Lead Times in Small and Medium Level Enterprises in IT Sector

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Abstract--- Lead time refers to the latency between the initiation and execution of a process. Longer lead time has a direct impact on project delivery time and the project cost. This paper describes the problem which the Small and Medium Level enterprises (SMEs) face due to an increase in the lead time. The paper attempts to identify the factors contributing to increased lead time in three stages. In the first stage, a survey was conducted at SMEs, PSUs, Private and Public Sector IT firms to understand the factors causing turbulence in the business environment. In the second stage, a case study was carried out to find out the challenges faced by a SMEs in Bangalore. The case study brought forward the need to adapt agile development with an objective to develop new features with a shorter lead time and also unfolded several 'waste' factors. Finally to understand these 'non-value added' factors (which are major contributors in project delay) and also the cause and effect behind the longer lead time, Value Stream Mapping (VSM) and Failure Mode Effective Analysis (FMEA) was performed to carry out a statistical analysis of the given problem.

Keywords--- SMEs, FMEA, VSM, Agile Development.

I. Introduction

The term "Lead time" [1] refers to the time gap between the initiations of the process where the customer places the order to the order being delivered to the customer. Ideally the lead time refers to the total time required for completing the process ordering the product to shipping them to the customer. The issue involved here is the time, the time required to deliver the product will vary due to various factors like lack of skilled workers, lack of software tools, insufficient of funds, lack of understanding of the problem from the client's needs. Lead time has various advantages:

1. Bringing flexibility especially during rapid changes in the market.
2. In order to beat your competitors by promptly delivering the goods in more efficient way.
3. To avoid problem of losing stocks leading to loss in sales and customers.
4. Effectively meeting the deadlines and maintaining consistency.

A. Problems with Longer Lead Time

It is not for every organization as it has various roadblocks and constraints as a results various projects will be in the pipe line. The following are various roadblocks generating longer lead time.

1) Handoffs – There is always cultural break down between the development and operational department of the product development teams. The requirement flows in the forms of batches and queues during the handoff process. There is an information flow between various departments. Now if there is delay in sending of the information from one team to another organization then there is potential of more batches of the information in the pipeline. As a result there will be more ambiguity between the teams and result in the high costs and failed releases.

2) Approval Processes – Insufficient data sharing between the various departments leads to more complexity especially in the larger organization where without the data sharing the approval process is near to impossible as a results it frustrate the delivery team. Also the quality of the product will also be reduced.

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Analysis of Machine Learning Algorithms in Health Care to Predict Heart Disease

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ABSTRACT

This article describes how healthcare organizations is growing increasingly and are the potential beneficiary users of the data that is generated and gathered. From hospitals to clinics, data and analytics can be a very powerful tool that can improve patient care and satisfaction with efficiency. In developing countries, cardiovascular diseases have a huge impact on increasing death rates and are expected by the end of 2020 in spite of the best clinical practices. The current Machine Learning (ml) algorithms are adapted to estimate the heart disease risks in middle aged patients. Hence, to predict the heart diseases a detailed analysis is made in this research work by taking into account the angiographic heart disease status (i.e. ≥ 50% diameter narrowing). Deep Neural Network (DNN), Extreme Learning Machine (elm), K-Nearest Neighbor (KNN) and Support Vector Machine (SVM) learning algorithm (with linear and polynomial kernel functions) are considered in this work. The accuracy and results of these algorithms are analyzed by comparing the effectiveness among them.

KEYWORDS

Deep Neural Network, Extreme Learning Machine, K-Nearest Neighbor and Support Vector Machine Learning Algorithm, Machine Learning

INTRODUCTION

In the present world there are numerous logical innovations which are not precise but help the specialists in taking clinical choice. Heart disease prediction framework can help therapeutic experts in anticipating condition of heart, in light of the clinical information of patients nourished into the framework (Maglogiannis, Loukis, Zafiropoulos & Stasis, 2009). Around the world 12 million deaths happen consistently because of the heart sicknesses and this has been evaluated by the World Health Organization. Due to cardio vascular illness a large portion of the deaths happen and is creating nations the most important motivation in research. The various infections that influence the heart are encompassed by the term heart disease. In general, it is viewed as the essential explanation for deaths in grown-ups (Kang, Li & Wang, 2013). In the diverse nations including India, heart disease is the real reason for setbacks. In the United States it kills one individual at regular intervals.

The expression of cardiovascular sickness normally integrates the multiplicity of situation that manipulate the heart and the veins the way in which blood is pumped and travel through the body. Cardio Vascular Disease (CVD) is a serious ailment, inability and passing while Coronary Heart Disease (CHD) can take place by the reduction of blood and oxygen supply to the heart (Feng, Zhang, Chen, Hua & Ren, 2015). The CHD includes the myocardial areas of dead tissue, heart assaults and angina pectoris, or trunk agony. A heart assault occurs because of a sudden blockage of a coronary corridor because of blood coagulation. The trunk torments is the deficiency in heart

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Cluster Based Deep Neural Network (C-DNN) Approach to Detect Heart Disease

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Abstract

The term 'heart disease' refers to circumstances that block blood vessels and may lead to a heart attack, chest pain or stroke. The heart conditions will the affect heart's muscle, valves or rhythm leading to heart diseases and bypass surgery or coronary intervention is used for solving these issues. In this research work, an effective Cluster based Deep Neural Network approach is proposed to detect the angiographic heart disease (i.e. to detect the patients with ≥ 50% diameter reduction of a major coronary artery). The data set is grouped using K-Means clustering algorithm and then the heart disease is predicted using cluster based deep learning approach. The proposed method is compared with various parameters for classifier algorithms like DNN, SVM-Linear, SVM- polynomial, KNN, ELM, ELM- cluster and to prove the system effectiveness in terms of accuracy.

Keywords: ***Heart Disease, Deep Neural Network, K- Means clustering, Prediction, Data Cluster, CNN.***

1. INTRODUCTION

Heart disease is the major disease globally, that the census shows many people die annually with this and research works have been carried out so far to find the risk factors that lead to heart disease. To provide a promising solution by identifying heart risk factors is still a research challenge. The main risk factors identified in developing heart diseases are the high blood cholesterol in patients with hypertension and diabetes. Other risk factors in heart disease is because of life style factors such as eating, drinking alcohol, smoking, obesity etc. [1,2].

A set of methods that accordingly discover patterns in data is determined by Machine Learning (ML), and can be applied to uncover patterns to determine or enable decision making

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Lung Cancer Survivability Prediction based on Performance Using Classification Techniques of Support Vector Machines, C4.5 and Naive Bayes Algorithms for Healthcare Analytics

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Abstract

The Healthcare Analytics(HcA) is a process in which clinical data is analyzed and patient's treatment is performed. The treatment depends on the analysis of clinical data accumulated from Electronic Health Records (EHRs), pharmaceutical and research and development cost and claims of patient. Lung cancer is the most common among cancer disease and the foremost reason for deaths in both men and women. In this research work EHRs are analyzed and the survivability rate is predicted for lung cancer. Researchers apply Machine Learning Techniques (MLT)for predicting the survivability rate so that chemotherapy can be provided for cancer affected people. MLTare well accepted by doctors and work well in diagnosing and predicting cancer. An ensemble of Support Vector Machine (SVM), Naive Bayes (NBs)and classification trees (C4.5) can be used to evaluate patterns that are risk factors for lung cancer study. The North Central Cancer Treatment Group (NCCTG) lung cancer data set along with new patient data is used for evaluating the performance of support SVM, NBs and C4.5. The comparison isbased on accuracy, Area Under the Curve(AUC) , Receiver Operating Characteristic (ROC) and the resultshows that C4.5 performs better in predicting lung cancer with the increase in training data set.

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Cluster Optimization in Wireless Sensor Networks Using Particle Swarm Optimization

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Abstract. Clustering approaches have been used to an extensive range of issues and also in Wireless Sensor Network (WSN) domain efficiently to address scalability problem. This paper proposes a Particle Swarm Optimization (PSO) technique to enhance the lifetime of wireless sensor networks. Better scalability is achieved through clustering process to make sure of even distribution of nodes into clusters and thus eliminating leftover nodes problem which will be a major cause for draining out the energy of sensor nodes and results in reduced lifetime of overall network. The Spanning tree based data routing process will ease the task of cluster heads while forwarding the data further towards base station. The proposed work is carried out in NS-2, the results show that PSO outperforms the existing techniques such as DRINA, BCDCP, OEERP, E-OEERP in terms of network lifetime, throughput, packet delivery ratio, residual nodes and packet drop count.

Keywords: Routing protocol · Wireless sensor networks
Particle Swarm Optimization

1 Introduction

The sensor nodes used in Wireless Sensor Network (WSN), sense the real world events and transmit data to base station for further processing. Sensors assist the society, since they can be integrated into vehicles, eco space and many devices. They can help to avoid terrible events such as collapsing of buildings, preserve natural resources, improves productivity and security. It also helps in developing new technologies such as smart home applications. As the technology advances in integrated circuit system, electro mechanical system wireless systems, the usage of wireless sensor networks are increased extensively. The size of the microprocessors has reduced in time and there is reduction also in its cost. This reduction in size, cost and increase in computation of microprocessors has led to the development and usage of more sensors. Wireless Sensor Networks are used extensively in sensing and reporting about floods, pollution, water usage, improving crop quality and fertilizers [1–4].

Many of the sensors get connected to controlling devices and devices which process (for through LAN), a rapidly increasing sensor nodes communicate the information through wireless channels to a base station. Most of the applications need dense

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Fisheye state Protocol in Correlation with Power Consumption in Ad-hoc Networks

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Abstract

Ad-hoc networks are self-organizing networks and hence the challenges are also larger. Active research is going on in the field of ad-hoc networks for the same reason. The challenges are numerous like routing, MAC, mobility, scalability, reliability, security, power consumption, bandwidth etc., Depending upon the application of ad-hoc networks the specific challenges can be dealt.

In this paper routing protocols has been studied thoroughly and proactive routing protocols have been chosen for a particular challenge, power consumption. FSR is compared with other proactive protocols like DSDV and OLSR. It is found from simulation results that Fisheye state routing protocol has been proved to be best for many parameters like throughput, packet delivery ratio and energy consumption. FSR, OLSR, DSDV has been implemented and FSR is chosen to be best for power consumption. The simulation is executed using discrete event simulator NS-2.

Category: Smart and intelligent computing

Keywords: Ad-hoc Networks, DSDV, Fisheye state, OLSR.

INTRODUCTION

Wireless communication is the quickly expanding & most vital technological areas in the communication field. Our lives are unimaginable without Wireless communication like TV, Radio, Mobile, Radar, GPS, Wi fi, Bluetooth, RFID etc. [18]. In latin adhoc means "for this purpose" . Ad-hoc networks are collection of autonomous nodes or terminals that communicate with each other by forming a multi-hop radio network and maintaining connectivity in a suburbanized manner in an infrastructure less environment. [16] Several classifications of Ad-hoc networks are MANET, VANET, FANET, WSN etc. Ad-hoc network often refers to a mode of operation of IEEE 802-11 wireless networks. Initially these networks were designed for battlefield networks & disaster recovery applications, due to their quick deployment feature without the existence of any infrastructure .But with rapid growth of mobile communication, MANETs are considered as major contemplate in the next generation network technologies.

Various power optimization techniques are existent in Ad-hoc networks. Optimization of power is of great importance in Ad-hoc networks as their organizational composition & lack of central co-ordination. The power control requirements vary depends on various layers like the physical, network & MAC layer implementations of Ad-hoc network [5].Generally power conservative protocols are divided into two main categories transmitter power control protocols & power management algorithms. Second classification can be further divided into MAC layer and network layer protocols.

It has been seen that in Ad-hoc network, power consumption does not always demonstrate active communication in the network. In a transmitting or receiving state power consumption of wireless devices is only moderately smaller than sleep state. It is better to turn radio off when it is not in use. Most of the power conservation schemes consider the nodes can adapt this transmission power, some of them consider position awareness of the nodes using GPS & capability of energy replenishment etc.

The rest of this paper is organized as follows we briefly discuss routing protocols in section 2. In section 3 in particular Fish eye state protocol is discussed. Section 4 is simulation results & analysis. Section 5 is conclusion & future work.

ROUTING PROTOCOLS

In mobile Ad-hoc networks nodes are mobile and can be connected actively in a random style. All nodes here are routers and involve in route discovery & conserving of routes to another nodes in the network. [4]. There are many classifications of protocols depending upon the diversity of application areas. The basic aim of the protocols are the maximize throughput and packet delivery ratio while minimizing packet loss, control overhead & energy usage. Nevertheless the comparative preferences of these criteria vary among different application areas. There are certain situations where ad-hoc networks are really the only possible solution, while in some other application ad-hoc network participate with other technologies. [11]. The routing protocols can be classified as flat routing, hierarchical & graphic position assisted routing [10]

Discovering & conserving routes in an Ad-hoc network is a challenge as topology of the network changes very frequently & requires more efficient & flexible mechanisms. Apart from handling the topology changes these protocols must deal with other restrictions such as low BW, limited power consumption, high error rates.

Proactive methods maintain router to all nodes, irrespective of whether those routes are needed or not. The main advantage of this category of protocols is that hosts can quickly obtain route information & establish a session.

Real-Time Facial Recognition Using Deep Learning and Local Binary Patterns

B. Venkata Kranthi and Surekha Borra

Abstract Today, surveillance is everywhere where the operators continuously observe the video captured by the camera to identify the human/object for public safety. Automated systems are being developed for real-time facial recognition as it is highly difficult for the operators to track and identify in highly crowded areas. The feature selection process is generally used to represent faces, and a machine learning-based approach is used to classify the faces in face recognition. A variety of poses, expressions and illumination conditions make the manual feature selection process error-prone and computationally complex. This paper proposes a less computationally complex real-time face recognition algorithm and system based on local binary patterns and convolutional neural networks (CNNs). A modified version of LENET is used instead for face recognition. The recognition accuracy of the proposed method is tested on two publicly available datasets. A new database covering most of the challenges like illumination and oriental variations, facial expressions, facial details (goggles, beard and turban) and age factor is also developed. The proposed architecture proved accurate up to 97.5% in offline mode and an average accuracy of 96% in the real-time recognition process. In the real-time process, frame reading and frame processing are done in two separate threads to improve the frame rate from 28 to 38 FPS.

AQ1

Keywords Face recognition · Deep learning · Real-time system · Face detection LBP · Computer vision

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A FRT - SVD Based Blind Medical Watermarking Technique for Telemedicine Applications

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ABSTRACT

In this article, a blind and robust medical image watermarking technique based on Finite Ridgelet Transform (FRT) and Singular Value Decomposition (SVD) is proposed. A host medical image is first transformed into 16 × 16 non-overlapping blocks and then ridgelet transform is applied on the individual blocks to obtain sets of ridgelet coefficients. SVD is then applied on these sets, to obtain the corresponding U, S and V matrix. The watermark information is embedded into the host medical image by modification of the value of the significant elements of U matrix. This proposed technique is tested on various types of medical images such as X-ray and CT scan. The simulation results revealed that this technique provides better imperceptibility, with an average PSNR being 42.95 dB for all test medical images. This technique also overcomes the limitation of the existing technique which is applicable on only the Region of Interest (ROI) of the medical image.

KEYWORDS

Arnold Scrambling, Blind Watermarking, Finite Ridgelet Transform (FRT), Medical Image, Singular Value Decomposition (SVD)

1. INTRODUCTION

In the last few years, medical treatments and diagnosis of the patients are being solved with the support of a variety of medical data such as images or signals. While the examples of medical images which are widely used are Magnetic Resonance Imaging (MRI), X-ray, Computerized Tomography (CT) and Ultrasound (US), the examples of 1-D medical signals are ECG and EEG signals. Nowadays, it has become a common practice to share medical data among doctors and radiologists for better diagnosis, health solution, and treatment. Transferring medical images over a transmission medium is referred to as telemedicine (American Hospital Association, 2015; Yassin, 2015). The telemedicine aids in emergency treatment, home monitoring, military applications and medical education (Yassin, 2015) to name a few. Security of medical images becomes necessary when they are transferred over any open access network. Corruption or modification of medical images by someone or some process leads to serious health issues for any individual. There is in fact high probability for the medical images being corrupted or modified by various intentional and unintentional processing during storage or transmission over a medium. While various techniques such as cryptography and steganography are available for protecting medical images, the digital watermarking technique is the proven solution for copyright protection (Borra et al., 2017; Thanki et al., 2017; Lakshmi and Borra, 2016; Borra and Lakshmi, 2015; Borra and Swamy, 2014; Borra et al., 2012; Borra and Swamy, 2012; Thanki et al., 2011; Borra and Swamy, 2009).

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Fragile watermarking for copyright authentication and tamper detection of medical images using compressive sensing (CS) based encryption and contourlet domain processing

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Abstract

With the rapid growth in communication and computing technologies, transmission of digital images and medical images over the Internet is on the rise. In such scenario, there is a special need to meet the security and privacy issues and challenges of an individual and Intellectual Property (IP) owners. It is highly important for an individual to keep his/her personal images against invalid manipulation by the impostors. Hence developments of authentication and tamper detection techniques are the need of the hour. In this paper, a new hybrid non-blind fragile watermarking technique is proposed for tamper detection of images and for securing the copyrights of sensitive images. A combination of Compressive Sensing (CS) theory, Discrete Wavelet Transform (DWT), and Non-Subsampled Contourlet Transform (NSCT) are employed to achieve security, high embedding capacity, and authenticity. In this technique, the requirements are achieved by inserting encrypted watermark in lower frequency contourlet coefficients of cover images. The experimental results prove that this proposed technique provides high security, high imperceptibility, authenticity and tamper detection of various common signal processing and geometrical attacks.

Keywords Authentication · Contourlet transform (CT) · Fragile · Medical image · Non-blind watermarking · Security

1 Introduction

The digital images are convenient, but can be easily accessed, modified, and distributed by unauthorized people when shared over Internet. A medical image which includes personal

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Crypto-watermarking scheme for tamper detection of medical images

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SPRINGER BRIEFS IN APPLIED SCIENCES AND TECHNOLOGY · COMPUTATIONAL INTELLIGENCE

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Satellite Image Analysis: Clustering and Classification

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EGR, DPF and DOC techniques for comprehensive reduction of emissions for engine fuelled with diesel/Dee blends by three approaches (Conference Paper)

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Abstract

Objectives: 1. To study feasibility of diesel fuel usage in modified diesel engine with optimized engine parameters in terms of injection timing, injection pressure, number of holes on nozzle and combustion chamber shapes on its performance, emission and combustion characteristics. 2. To conduct performance tests on existing diesel engine with optimized DEE/Diesel blend ratio along with EGR and after treatment devices. 3.To conduct performance and emission behaviour of diesel engine with manifold injected Di Ethyl Ether and study combined effect of EGR and after treatment devices 4. To compare performance and emissions of Diesel engine at these various operating conditions and evolving an optimum condition leading to least NOx emissions. Methodology: Experiments were conducted on single cylinder four stroke diesel engine coupled to eddy current dynamometer. In the first approach, base line data generation for optimization of injection timing, injection pressure, number of holes and combustion chamber types is done. Further, EGR is supplied at the rate of 5, adopting DPF and DOC, NOx emission is measured. In second approach, test

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Effects of Using Diesel Particulate Filter and Diesel Oxidation Catalyst with Exhaust Gas Recirculation on the Performance of Compression Ignition Engine Fuelled with Diesel- Di Ethyl Ether Blend

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ABSTRACT

In the present work, a single cylinder diesel engine was suitably modified to operate on diesel, diesel and diethyl ether (DEE) in blended form in which percentage of diethyl ether in diesel blends was varied from 5 to 20% in steps of 5%. Further the effects of exhaust gas recirculation (EGR) on the performance of diesel engine fueled with alcohol and diesel blended fuels were studied. The pre-and post-combustion methods were adopted to study the performance of the modified diesel engine. Post combustion analysis involved use of emission control devices like Diesel Particulate Filter (DPF) and Diesel Oxidation Catalyst (DOC) combination for effective control of unburned hydrocarbon (UBHC) and particulate matter (PM) respectively. From the study it was observed that the engine was consistent in its operation throughout the experimental investigations when operated on selected fuel combinations. Based on the comprehensive experimental investigations carried out the following conclusions have been derived. The brake thermal efficiency (BTE) increased with increased injection of DEE and highest BTE was found to be 29.25% for 80% loading condition using 20% DEE and without EGR. In-cylinder pressure and heat release profiles showed delayed combustion for DEE blends compared to diesel and the same was more pronounced with higher DEE blends. Shorter combustion duration was observed with DEE compared to diesel. Increased smoke and UBHC emissions were observed for increased EGR induction for all operating conditions while the oxides of nitrogen (NOx) emission decreased. For 20% DEE fuel operation adopted along with DPF, smoke emissions reduced by 75%. It is observed that, adopting DPF, NOx emission reduced by 10%; while adopting DOC, NOx emission reduced by 6%. At 80% load optimum conditions for the modified diesel engine operation with selected fuel combinations were observed for 20% diethyl ether/diesel ratio, and 20% exhaust gas recirculation rate along with both DOF and DOC respectively.

Keywords: Di-Ethyl ether, diesel particulate filter, diesel oxidation catalyst, performance

INTRODUCTION

Diesel engines are durable, economical and therefore they are an important power source in farming and industrial equipments. However, the problems with them being their higher emissions. Therefore, all researchers should chant the statement "Research makes diesel engine greener".