

Effect of vertical location of the spark plug on the performance of a raw biogas-fueled variable compression ratio spark ignition engine

Energy & Environment

0(0) 1-26

© The Author(s) 2019

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/0958305X19841270

journals.sagepub.com/home/eae



**Ashish J Chaudhari¹, Santosh K Hotta¹,
Niranjan Sahoo^{1,2} and Vinayak Kulkarni^{1,2} **

Abstract

The present experimental investigations deal with the spark plug location and its effect on the performance and emission of a 100% raw biogas-fueled variable compression ratio engine. Different measurements of performance, combustion, and emission parameters are used to analyze the effect of four spark locations protruded inside the clearance volume (viz. 0, 2, 5, and 10 mm). The protrusion of the spark plug by 2 mm is observed to be optimum for compression ratios 8, 9, and 10. For this optimum spark plug location, engine efficiency and fuel economy are found to be higher. Faster combustion, in this particular case, has led to early and higher peak cylinder pressure and burnt gas temperature. Lower emissions of hydrocarbons and carbon monoxide have verified the optimality of 2 mm protrusion location of the spark plug for all the compression ratios. Thus, present investigations recommend minor protrusion of the spark plug to assist the combustion process, to enhance the performance and lowering the emission of a biogas-fueled engine.

Keywords

Spark ignition engine, spark plug location, variable compression ratio, raw biogas, optimum performance, alternative fuels

¹Centre for Energy, Indian Institute of Technology Guwahati, Guwahati, India

²Department of Mechanical Engineering, Indian Institute of Technology Guwahati, Guwahati, India

Corresponding author:

Vinayak Kulkarni, Department of Mechanical Engineering, Indian Institute of Technology Guwahati, Guwahati 781 039, India.

Email: vinayak@iitg.ernet.in

HEAD
Dept. of Mechanical Engg.
Vidyavardhini's College of
Engineering & Technology
Vardoli Road-401202.

Combined impact of compression ratio and re-circulated exhaust gas on the performance of a biogas fueled spark ignition engine

Cite as: J. Renewable Sustainable Energy **11**, 013104 (2019); doi: 10.1063/1.5045742
Submitted: 23 June 2018 · Accepted: 29 December 2018 · Published Online:
23 January 2019



View Online



Export Citation



CrossMark

Ashish J. Chaudhari, Santosh K. Hotta, Niranjana Sahoo, and Vinayak Kulkarni^{a)}

AFFILIATIONS

Centre for Energy, Indian Institute of Technology Guwahati, Guwahati 781 039, India

^{a)} Author to whom correspondence should be addressed: vinayak@iitg.ernet.in. Tel.: +91-361-2582655.

ABSTRACT

The usage of biogas as a potential fuel in a spark ignition (SI) engine is the theme for the present study. The exhaust gas recirculation (EGR) is a significant technique for improving the performance of the SI engine. Thus, the novelty of the experimental investigations lies in implementing the EGR technique for emission control of the biogas-fueled engine. The raw biogas (52% methane and 47% carbon dioxide), obtained from a biogas digester (using cow dung as the source), was the engine fuel for a four stroke, water cooled, variable compression ratio SI engine set-up. Here, the engine performance and emission related parameters were measured. When operated in the raw biogas mode at an optimum spark timing of 45°CA before the top dead center, the engine produced maximum torques of 11 N m, 14 N m, and 16 N m for compression ratios 8, 9, and 10, respectively. The effect of different EGR rates on the emission control was also investigated. The net heat release rate without EGR was found to be 22.623 J/°CA at 368°CA, which further reduced to 14.233 J/°CA at 386°CA for EGR10. Moreover, it was clearly evident that low EGR rates (below 10%) were effective in reducing NO_x significantly, with minor compromise in power and brake specific fuel consumption. But the emissions of hydrocarbon and carbon monoxide were found to be higher with the increase in EGR. The operation of the engine with medium or heavy EGR rates resulted in issues related to intense pressure fluctuations and large cycle-to-cycle variation in performance. Thus, the present investigations recommend the use of low EGR (below 10%) in a biogas-based engine for lower NO_x emission and better fuel efficiency.

Published under license by AIP Publishing. <https://doi.org/10.1063/1.5045742>

I. INTRODUCTION

The critical issues of fossil fuel depletion and environmental protection prompt researchers around the globe to explore alternatives to petroleum based fuels (Ramalingam *et al.*, 2018 and Dhinesh *et al.*, 2018). Liquid fuels (i.e., alcohols and vegetable oils) and gaseous fuels (hydrogen, biogas, producer gas, etc.) are promising renewable energy sources. Among them, gaseous fuels are more suitable for internal combustion (IC) engines because of their wider range of flammability limits, higher hydrocarbon (HC) ratio, and capability to form homogeneous mixtures (Al-Baghdadi, 2004 and Porpatham *et al.*, 2013). Very low levels of pollutant emission were reported for spark ignition (SI) and compression ignition (CI) engines using gaseous fuels. Biogas is one such renewable fuel and attractive source of energy produced from anaerobic digestion of organic matter

(Hotta *et al.*, 2019a and Maroušek *et al.*, 2018). It consists of approximately 50%–70% methane (CH₄), 25%–50% carbon dioxide (CO₂), 1%–5% hydrogen (H₂), 0.3%–3% nitrogen (N₂), and other impurities, notably hydrogen sulfide (H₂S). In some cases, it is composed of 60% CH₄ and 40% CO₂ (Crookes, 2006 and Huang and Crookes, 1998). Since the auto-ignition temperature of biogas is comparatively higher than that of gasoline, it can resist knocking which is desirable in the SI engine (Porpatham *et al.*, 2007, 2012, and 2013). Due to the higher antiknock index, a biogas fueled SI engine can sustain higher compression ratios (CRs) than gasoline-fueled engines. Further, it enhances their thermal efficiency and reduces fuel consumption (Porpatham *et al.*, 2007). However, the better suitability of spark ignition engines to high-octane fuels can be harnessed only if special attention is paid to accommodate a gaseous fuel. Such a

DESIGN AND DEVELOPMENT OF AUTOMATIC LUBRICATION SYSTEM FOR BEARINGS AND GEARBOX

¹Siddhesh Penkar, ²Parth Rathod, ³Hardik Churi, ⁴Prathmesh Chaudhari, ⁵Dr. Ashish Chaudhari

¹Co-Author, ²Co-Author, ³Co-Author, ⁴Co-Author, ⁵Co-Author

¹Mechanical Engineering,

¹Vidyavardhini's College of Engineering and Technology, Mumbai, India

39_Design and development of automatic lubrication system for bearing and gearbox by Dr.Ashish Chaudhari

Abstract: Automatic lubrication system has marked appreciable progress in almost all mass production industries throughout the world. This study has been undertaken to provide automatic lubrication system to worm gearbox and sprag bearing of spool used to wind steel wire. This system was developed for TATA Steel Wire Division Boisar to reduce their downtime and boost the production activities. We have developed a low cost automatic centralized system for bearings and gear box. Low cost in the sense that a timer is used to re lubricate the system at specific time intervals. This system gives safety part to worker and minimizes manpower required for lubrication. This system also saves the lubrication, labor wages and keeps the system in proper working parameters as per the proposed design. The actual lubrication system was proposed to the plant with cost of entire system along with maintenance and operation cost. Further improvements in the system required is development of a software system which will effectively monitor the entire system and will ensure the leakage problems to ensure smooth operation. This proposed system will operate in closed loop and feedback from sensors will avoid sudden breakdown during operation. Although any problem in existing system will not cease the production of plant.

Index Terms – Sprag bearing, worm gearbox, timer

I. INTRODUCTION

Oil Recirculation Systems are not only used to pump oil to bearings or gears to lubricate them but also to purge them of wear debris and, if necessary, to remove heat introduced into the oil by power losses due to friction. However, the majority of recirculation oil systems are nearly always custom designed to suit the application. Reservoir, pumps, filters, oil coolers, reservoir heating, pressure control and instrumentation are selected depending on the duty and the viscosity of the lubricant required to be pumped. Too much lubrication can destroy bearing and too little lubrication is also harmful, so automatic lubrication system is a boon for highly automated industries. The motivation of this study came in our mind when we were intern in TATA STEEL and we were placed in the maintenance department to analyze the maintenance procedure of their industry and suggest the required changes to reduce downtime for machines used in wire drawing section. We observed that the machine would operate for 24x7 and would be shut for maintenance for nearly 8 hours in whole month. So, we realize that the downtime was increasing due to improper lubrication as it was done by the unskilled worker and it would lead to frequent shutdown as bearings and gearbox would get over heated. So, we decided to atomize the lubrication process and we were in search of that process that will have low initial cost and higher outcomes. So, we decided to develop an oil circulating system which would be low cost and easy to maintain as well as operate. This paper covers the entire methodology to develop a cost-effective oil circulating system. This system is truly customized as per customer requirement and made to suitable for a range of oil viscosities from 100cst to 320cst. So that this system will be integrated with any other system and designed in such a way that if manufacturer wants to expand the current system it would be possible for him to do so. Different systems of lubrication system were studied, and we concluded to oil circulating system based on customer requirement and budget. The need for automatic lubrication system in machines that operate 24x7 was evaluated in this report and cost saving in the expensive system that is available in market today is done. The correct amount of lubricant required for bearings and gear box was evaluated so that saving in cost of lubrication can be done. Our aim is to reduce unnecessary loss of lubricant and provide metered quantity of lubricant. This reduces the cost of maintenance and downtime for each machine. This is necessary for each industry which operates 24x7 and for the machine which is in constant load. This makes the industry to operate at ease and reduce overheating problems in gear box especially when worm gear box with higher reduction ratio is used. This system was implemented in industry as the wear out contaminants present in gear box that would remain for at least period of 10 months needs to be filtered. So, to develop a cost-effective automatic lubrication system for the industry which will be able to operate in any environmental conditions to maintain suitable property of lubricant is the aim of our study.

1.1 Lubricant Selection

For this we referred we referred gearbox manual and based upon the heat generated in gearbox same lubricant was used even for sprag bearing. Thus, most suited lubricant SAE 320 in terms of viscosity and cooling requirements was selected.

1.2 Data and Sources of Data

For this study we collected data from PSG design data book and lubrication tribology book

Equations

$$\begin{aligned} \text{Heat generated} &= (1 - \text{theoretical efficiency of gear box}) (\text{Power required for gearbox operation}) \\ &= (1 - \eta_{th}) (P) \end{aligned}$$

$$\text{Heat Dissipated} = (\text{Temperature of shaft} - \text{Surrounding Temperature}) (\text{Heat carried by oil})$$

HEAD
Dept. of Mechanical Engg.
Vidyavardhini's College of
Engineering & Technology
Vasai Road-41

Tri-Variate Copula Modeling for Spatially Correlated Observations in Wireless Sensor Networks

Sunayana. Jadhav and Rohin Daruwala

Dept. of Electronics Engg., VJTI, Mumbai, India

Email: sunayanajadhav04@gmail.com; rddaruwala@vjti.org.in

Abstract—Correlated Observations arise in Wireless Sensor Networks (WSNs) comprising of crowded sensor nodes monitoring a common physical phenomenon. Correlation exists both in spatial and time domain, numerous models have addressed linear dependency in sensor observations. However, Copulas model both linear as well as non-linear dependency in spatial domain. In this paper we have proposed a fusion model for generalized case using Copulas and evaluated it for a tri-variate case. A 3D Copula model previously introduced is computed and analyzed based on Neyman-Pearson framework. Gaussian and Student-t Copulas demonstrate a superior performance for spatially correlated observations as compared to Chair-Varshney rule for independent observations.

Index Terms—Wireless sensor networks, distributed detection, spatial correlation, copula, fusion, Tri-variate.

I. INTRODUCTION

Wireless Sensor Networks is composed of randomly deployed sensor nodes and the main aim lies in detection of events. Events like landslides, forest fires, earthquakes, tsunamis, etc. [1] may cause damage to human lives if not detected accurately. WSNs can be implemented for continuous monitoring and detection of such events, but scenarios in this case require high density of sensor nodes. Detection, parameter estimation or tracking are the main tasks in applications of WSNs. The main aim of any sensing system is detection of event. For example, in the cases of environmental monitoring, it is of interest to first detect the location of forest fire, before determining the extent of fire spread. For systems observing rare events such as surveillance systems, detection of event is always necessary.

Detection of such events, result into correlated observations in space and as well as time domain. A survey on decentralized detection by authors in [2] illustrated that dependent randomization requires larger co-ordination between sensors. Such co-ordination can be carried off-line and no additional online communication is required. Authors in [3] started preliminary work on distributed detection with fusion as an active research area. The goal was to design a theoretical framework for detection with distributed sensors due to disadvantages of centralized scheme. Wherein for Centralized scheme computational complexity of the Fusion Center increases tremendously. Also most of the previous analysis

carried out for statistically independent observations. Given the hypothesis, Likelihood Ratio Test (LRT) for local sensor decision rules under the Bayesian and Neyman Pearson criterion is proved in [4]. When assumption of conditional independence does not hold problems tend to be more complex. This is illustrated in [5] where authors designed a distributed detection system and studied the effect of correlated noise on system performance. Assuming local sensors have same operating point and symmetric distribution, signal detection is done. Detection of known signal in additive Gaussian and Laplacian noise is considered but, the observations resulted into performance loss. Thus distributed detection with conditionally dependent observations is known to be a stimulating problem. Towards this end design of fusion rules using correlated decisions has been considered. A new approach is discussed taking into account spatial correlation and constraining the local sensors to be binary quantizers. This problem is analyzed in [6] and they proposed a novel method to fuse correlated sensor decisions obtained by binary quantization. Proposed work used Neyman Pearson framework based on Copula theory to construct joint density of sensor observations. Use of Gaussian and Student-t copulas is also discussed. However authors in this paper focused on two sensor design analysis. In [7] event detection problem is considered, where sensors are designed as uniform multilevel quantizers. Analysis is done for two sensor case using copula theory for fusion of data. Also extension for N sensor case is done which illustrates evaluating N dimensional integrals thereby increasing computational processing. In [8] Copula based models are suggested for spatial interpolation to analyze traffic flow from remote microwave sensors. Results of copula-based models are compared with three kriging methods. Results illustrate that for complex traffic conditions Copula-based models are more effective and are also insensitive to the effects of temporal changes. Further a tri-variate model is developed in [9] using R-vine decomposition. But the model evaluated and analyzed multivariate copulas using a cascade of bivariate copulas.

considering above limitations we tried to develop a framework for independent as well as dependent observations using Copulas. And also have formulated a mathematical framework using Log-Likelihood Ratio test for fusion statistics of sensor

Manuscript received April 2, 2019; revised September 3, 2019.
doi:10.12720/jcm.14.10.951-957



Time Shifted Pilot Signal Transmission With Pilot Hopping To Improve The Uplink Performance of Massive MIMO System For Next Generation Network

Amrita Ruperee^{1*}, and Shikha Nema²

¹ Department of Electronics and Communication Engineering,
S.N.D.T. University, Mumbai-400015 - INDIA
[e-mail: amritaruperee@gmail.com]

² Department of Electronics and Communication Engineering,
S.N.D.T. University, Mumbai-400015 - INDIA
[e-mail: shikhanema@gmail.com]

*Corresponding author: Amrita Ruperee

Received January 25, 2019; revised March 12, 2019; accepted April 7, 2019;
published September 30, 2019

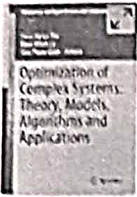
Abstract

The paucity of pilot signals in Massive MIMO system is a vital issue. To accommodate substantial number of users, pilot signals are reused. This leads to interference, resulting in pilot contamination and degrades channel estimation at the Base Station (BS). Hence, mitigation of pilot contamination is exigency in Massive MIMO system. The proposed Time Shifted Pilot Signal Transmission with Pilot signal Hopping (TSPTPIH), addresses the pilot contamination issue by transmitting pilot signals in non-overlapping time interval with hopping of pilot signals in each transmission slot. Hopping is carried by switching user to new a pilot signal in each transmission slot, resulting in random change of interfering users. This contributes to the change in channel coefficient, which leads to improved channel estimation at the BS and therefore enhances the efficiency of Massive MIMO system. In this system, Uplink Signal Power to Interference plus Noise Power Ratio (SINR) and data-rate are calculated for pilot signal reuse factor 1 and 3, by estimating the channel with Least Square estimation. The proposed system also reduces the uplink Signal power for data transmission of each User Equipment for normalized spectral efficiency with rising number of antennas at the BS and thus improves battery life.

Keywords: Channel estimation, Hopping, Pilot contamination, Pilot signal, Signal Power to Interference plus Noise Power Ratio.



HEAD
Dept of Electronics and
Telecommunication Engg
Vidyanandini's College of
Engineering & Technology
Vasai Road, 401 225




World Congress on Global Optimization

WCGO 2019: **Optimization of Complex Systems: Theory, Models, Algorithms and Applications**
pp 58–67

Home > [Optimization of Complex Systems: Theory, Models, Algorithms and Applications](#) > Conference paper

A B-Spline Global Optimization Algorithm for Optimal Power Flow Problem

Deepak D. Gawali , Bhagyesh V. Patil, Ahmed Zidna & Paluri S. V. Nataraj

Conference paper | First Online: 15 June 2019

1582 Accesses | 1 Citations

Part of the [Advances in Intelligent Systems and Computing](#) book series (AISC, volume 991)

Abstract

This paper addresses a nonconvex optimal power flow problem (OPF). Specifically, a *new B-spline approach* in the context of OPF problem is introduced. The applicability of this new approach is shown on a real-world 3-bus power system. The numerical results obtained with this new approach for this problem a 3-bus system reveal a satisfactory improvement in terms of optimality when compared against traditional interior-point method based MATPOWER toolbox. Similarly, the results are also found to be satisfactory with respect to the global optimization solvers like BARON and GloptiPoly.

Keywords

Polynomial B-spline Global optimization

Polynomial optimization Constrained optimization

A. Ripan
HEAD
Dept. of Instrumentation Engg.,
Vidya Vardhini's College of
Engineering and Technology,
Vasai Road 401 202

Predictive Maintenance For Hydraulic System

P. Ingole, P. Kapse, S. Badhe, S. Bholani, V. Pande

Department of Instrumentation Vidyavardhini's College of Engineering & Technology Vasal, India-401202
Corresponding Author: P. Ingole

ABSTRACT—Production losses in the industry are a serious issue which must be reduced to a minimum level. The continuous working of production lines, sometimes, is hindered due to several factors. All production lines consist of moving parts and hence the wear and tear of parts is inevitable in any industry. While there is no scope of eliminating the mechanical parts, we certainly can monitor the status of these parts and take the necessary action from time to time. This step ensures that the loss is minimized since it introduces a window to take the required action without any long term hindrance. There is not a fixed method to implement the monitoring of parts (for ex. valves, sensors etc.), the user is free to choose a suitable method for carrying out the monitoring. One such method is predictive maintenance: it is the maintenance of plant equipment by using various algorithms and analysis technique. It is essentially the alert maintenance system. The system consist of microcontroller [11] model will help to determine the most probable time of machine or system equipment failure. The algorithm will analyze the data and take the assigned action which could be just alert or shutting system down to avoid risk equipment of damage to other equipment of plant. The data abstraction and data recording is the first and important step of the whole system. Second is the analysis based on the data given and third step will be the action according to the input data. The process will be repeated after a fixed interval of time to get more precise result for the plant.

Keywords—monitoring, analysis, microcontroller, algorithm, data abstraction

Date Of Submission: 26-04-2019

Date Of Acceptance: 06-05-2019

I. INTRODUCTION

Most of the present systems shutdown immediately when a system failure occurs, this leads to some serious drawbacks in the flexibility of the system which mainly includes: High maintenance costs, Limited equipment life, Increased downtime and deteriorating production quality. Thus, there is a need of having a predictive maintenance technique inbuilt in a system which helps overcome these downsides. A study was made by M. S. Lande, P. M. Sirsat and R. S. Tupkar [2] to familiarize maintenance personnel with the basic information necessary for servicing and repairing of DT40 CNC Milling Machine. Also Jeffrey K Jone & James White discussed about predictive maintenance method and apparatus for use with heating ventilation, air-conditioning and/or refrigeration (HVACR) system [3]. The program developed by Jeffrey Jone uses the data entered by maintenance officer and gives the prediction about any failure of the system using graphs, tables and prediction commentary. Hong Bae Jun & Dimitris Kritsis introduced the research issues on closed-loop product lifecycle management (PLM) [4]. The main objective of the research was to provide right information in the right context at the right time to the consumer of the product. During this research several problems were explored and requirements for resolving them were addressed. Hence, the main aim

of predictive maintenance is to predict when equipment failure might occur. Anticipation of future failure allows maintenance to be planned before the failure occurs. Many studies and researches based on predictive maintenance system were published and were useful during project completion.

This paper is categorized as follows. The working and construction of the idea is introduced in Section II. The illustration of a model based on the idea is described in Section III. Section IV highlights the future work followed by concluding remarks in Section V.

II. CONSTRUCTION AND WORKING

Hydraulic systems are widely used in industries for different applications. One such application is the power pack machine [16]. It has an oil tank and cylinders. Thus the process parameters in this case are pressure and temperature and level of oil in the tank. Any system in the world has its life. After a certain time period, the machine parts start to degrade and hence errors occur. Now, these minor errors after a point result into machine failure. Thus Predictive Maintenance can prevent this machine failure. This is done by measuring various parameters in real time, analyzing them and accordingly performing the required set of actions. The sensors used to capture data will be placed at different points.

GSM & GPS Vehicle Antitheft Tracking System

A.More, N.Patil, P.Lad, V.Ranade, V.Pande

Department of Instrumentation Vidyavardhini's College of Engineering & Technology Vasai, India-401202

Corresponding Author: A.More

ABSTRACT— A vehicle tracking system is an electronic device installed in a vehicle to enable the owner or a third party to track the vehicle's location. This design of vehicle tracking system that works using GPS and GSM technology, which be the cheapest source of vehicle by using Global Positioning System (GPS) and Global System for mobile communication. The purpose of this project is to find the vehicle where it is and owner can stop that particular vehicle by sending a command signal .The entire system is hidden inside the vehicle. A button is provided inside the vehicle where owner need to press it within 60 second of starting the vehicle, else a text message is send to the owner and if no decision is taken by the owner then vehicle automatically turns off by the microcontroller within 15 minutes. And also we can track the live location of the vehicle using a Android App named as Antitheft.

This design will continuously monitor a moving vehicle and report the status of the vehicle on demand. For doing so an ATmega328 microcontroller is interfaced serially to a GSM Modem and GPS Receiver. A GPS modem will continuously give the data i.e the latitude and longitude indicating the position of the vehicle.

Keywords—GSM & GPS Modem, Android App

Date Of Submission: 30-05-2019

Date Of Acceptance: 14-06-2019

I. INTRODUCTION

In the 21st century, there is a need to give your vehicle an excellent protection with the only reliable anti-theft device. Vehicle Electronic control unit ensures the Best guarantee to protect your bike from different kinds of theft cases all over the world.. It is a vehicle security device that offers excellent protection to your vehicle. A vehicle with Electronic control unit security system helps the user to lock and unlock engine by the pressing a button and relay tripping. Mainly two types of Electronic control unit are used in Auto industry -Automatic Electronic control unit and Manual Electronic control unit that ensures smoother and secured operation. Again this system could not prove to provide complete security and accessibility of the vehicle in case of theft. So a more developed system was needed to be implemented

The main concept in this design is introducing the mobile communications into the embedded system. The vehicle thief takes only a few minutes to deactivate the security system. Furthermore, nobody will pay an attention when the bike alarm goes off. Based on these reasons, it is proposed that a GSM-based vehicle anti-theft system development is designed and developed to improve the performance of the current vehicle security system. Somehow if there is another way of transmitting the alarm to the vehicle owner that is not limited to the audible and line of sight, the system can be upgraded.

SMS is a good choice of the communication to replace the conventional alarm and an android app is very effective to know your current live location on Google map, because it can be done and does not require much cost. Although most of people know GPS can provide more security for the vehicle but the main reason people does not apply it because the cost. Advance vehicle security system is too expensive and not yet implemented. Cost for the circuit is too high. Besides that, the payment is taken . The main objective of this project is to design, construct and test a GSM-based vehicle anti-theft system that can be used to track the performance of vehicle security system.

II. CONSTRUCTION AND WORKING

Currently almost all the people own vehicles, theft is happening on parking and sometimes driving insecurity places. The safety of vehicles is extremely essential for public vehicles. Vehicle tracking and locking system installed in the vehicle, to track the place and locking engine motor. The place of the vehicle is identified using GPS modem whereas when the theft ignites the vehicle, message is send to the user by using GSM modem. After identified vehicle theft User sends a message to the microcontroller, then microcontroller issue the control signal to stop the engine motor. A button is provided inside the vehicle where owner need to press it within 60 second of starting the vehicle, else a text message is send to the owner and if no decision is taken by the owner then vehicle automatically turns

AUTOMATIC CONTROLLING OF ELECTRONIC DEVICES AND POWER CONSUMPTION ANALYSIS USING IoT

45_Automatic Controlling of Electronic Devices and Power
Consumption Analysis using IoT by Mr. Vikrant Agaskar

Prof. Vikrant A. Agaskar

Vidyavardhini's College of Engineering and Technology
Vasai, India

Ms. Juiely U. Naik

Vidyavardhini's College of Engineering and Technology
Vasai, India

Ms. Shivani R. Thorat

Vidyavardhini's College of Engineering and Technology
Vasai, India

Mr. Sandeep S. Shenoy

Vidyavardhini's College of Engineering and Technology
Vasai, India

Abstract – The electronic devices are left on by employees most of the time after working hours. This leads to wastage in current which eventually gives a huge amount of Electric bill . So here we have : An Automatic System where all the electronics devices are controlled remotely.

As we know, the electricity usage is increasing day by day. Consumer comes to know about the consumption of electricity in his house after a month.

Till then he is unaware of it. After receiving the electricity bill user gets worried. Hence to reduce the wastage of energy ,money as well as use the electricity efficiently, this device has been designed. The device notifies the user about his home electricity usages by sending alerts, statistics, graphs, etc. which will lead to energy saving. This device uses concept of IOT (Internet of Things) i.e. connecting the devices to the internet and transferring data collected by them to storage server. The user can then read and decide his actions and act accordingly.

The aim of this project is to help user to monitor the electricity consumed by its device and if the device is malfunctioning it will ultimately consume large amount of energy, and this can be detected and user would be informed about the device consuming more power.

Index Terms – Internet of Things (IOT)

I. INTRODUCTION

The usage of electricity is increasing day by day. User may come to know about the electricity consumption of his house after a month. Till then he is not aware about the consumption. After receiving the electricity bill user starts worrying. In order for reducing the wastage of energy and money as well as to use electricity efficiently, this system has been designed. User is notified by the system about his electricity usages by sending alerts, etc. which tends to be energy saving. This device uses concept of IoT i.e. connecting the devices to the internet and transferring data collected by them to storage server. The user can then read and decide his actions and act accordingly. Aiming to help user monitor the energy consumed by the device and if the device is malfunctioning it will ultimately consumes a huge amount of energy, and this

can be detected and user would be notified about the malfunctioning of that particular device.

II. RELATED WORK

There are some similar devices developed prior to this paper. They include smart meter and meter plug. Following gives the detail idea about both of them.

A. Smart Meter

Smart meter gives the energy consumption of a customer and provides information about it to the supplier company. Smart meters gives the reading of real-time consumption of energy information that contains the values of voltage, phase angle and the frequency and securely transmits that data to supplier company. Bidirectional communication of it provides the capability to collect data regarding the electricity. A smart meter system includes a smart meter, communication infrastructure, and control devices[3]. Smart meters can operate control commands not only remotely but also locally. All electronic devices and home appliances can be controlled by Smart Meter. They can also collect diagnostic information about the distribution grid, home appliances, and can communicate with other meters in their reach[3]. They bill the customer according to their usage excluding power consumed by storage devices. The collected data from smart meters contains a unique meter identifier, data timestamp and the values of electricity consumption. Electricity supply can be cut or reconnected remotely.

B. Meter Plug

The meter plug is placed in between the socket and device which gives the power consumption of the device is at that time. It gives power consumption during a connected session, and calculate kilowatts and dollars per day, week, month or year[7].


 HEAD
 Dept. of Computer Engg.,
 Vidyavardhini's College of
 Engineering and Technology,
 Vasai Road 401 202



Supply Bus Tracking Under Breakdown Condition

¹Prof. Anil Hingmire, ²Rajas B. Patil, ³Abhisheksingh Rawat, ⁴Pratik M. Parmar

¹Assistant Professor, ²⁻⁴Student,

¹Department of Computer Engineering,

¹Vidyavardhini's College of Engineering and Technology, Mumbai, India.

Abstract: In this quick life, everybody is in rush to achieve their goals. For this situation hanging tight for the transports isn't solid. Individuals who depend on the open transport their real concern is to know the ongoing area of the transport for which they are hanging tight for and the time it will take to achieve their transport stop. This data helps individuals in settling on better voyaging choices. This paper gives the significant difficulties in the open transport framework and examine different ways to deal with shrewdly oversee it. Current position of the transport is procured by incorporating GPS gadget on the transport and arranges of the transport are sent by either GPRS administration given by GSM systems or SMS or RFID. GPS gadget is empowered on the GPS beacon and this data is sent to brought together control unit or legitimately at the transport quits utilizing RF beneficiaries. This framework is additionally incorporated with the recorded normal paces of each section. This is done to improve the exactness by including the elements like volume of track, intersections in each portion, day and time of day. Individuals can follow data utilizing LEDs at transport stops, SMS, web application or Android application. GPS directions of the transport when sent to the brought together server where different landing time estimation calculations are connected utilizing authentic speed designs.

Index Terms - GPS, SMS, Android, ETA, GPRS, Google maps

1. INTRODUCTION

The Vehicle tracking system is a total security and fleet management solution. It is a technology to determine the location of a vehicle using different methods like GPS and other navigation system operating via satellite and ground-based systems. The focus of this project is to assist the supply bus to reach the bus which broke down enroute. This system includes modern software components that helps to track and locate the broken-down buses and aid them in order to minimize the delay for the passengers. Database and Software are used to give the location that is the coordinates of each visiting point that is saved in the database, which can be later displayed in a screen using Google maps. However, to view the location the vehicle has travelled the user has to connect themselves to the web server. Vehicle Security is an essential worry for all vehicle proprietors. Proprietors just as scientists are continually searching for new and overhauled vehicle security frameworks. For the modernization of innovation, it is presently conceivable to follow and intently screen vehicle progressively just as to check the historical backdrop of vehicles developments. One must be grateful to Vehicle Following Framework that has caused immensely to keep up the security of the vehicle by following its exercises at normal time interim. The system uses Global Positioning System [GPS], to send information about the location of the vehicle that is to be monitored and then send the latitude and longitude to the monitoring centre through satellite. At the monitoring centre different software is used to display the vehicle on the Google map. This is how our system tracks automobiles in real time. Due to real-time tracking facility, vehicle tracking systems have become increasingly popular among owners of vehicles as they are able to monitor their vehicle continuously. Monitoring center Software helps the vehicle owner with a view of the vehicle location on an electronic map. The user can use any browser to connect to the server and monitor the targeted vehicle on Google Map. Thus, it saves the user from the hassle of calling the driver to know the vehicle's location as it is now possible to track vehicle online. A vehicle tracking system combines the installation of an electronic device in a vehicle with purpose-designed software to allow the owner to monitor the vehicle, collecting data in the process from the device and deliver it to the base of operation. Urban public transportation companies are an increasingly common user of tracking systems, particularly in large cities.

2. EXISTING WORKS

2.1 K-MEANS ALGORITHM

K-Means is a standout amongst the easiest unsupervised learning figuring to make bunches in the instructive list. The procedure to orchestrate given enlightening file into given number of packs (k gatherings) is direct. It was first proposed by Stuart Lloyd in 1957. K-means clustering is a procedure for vector quantization, at first from banner setting up, that is notable for gathering examination in data mining. k-means gathering expects to allocate recognitions into k bundles in which each observation has a spot with the pack with the nearest mean. It is the most generally perceived figuring uses an iterative refinement procedure. It is in like manner implied as Lloyd's figuring, particularly in the product building system.

There are 2 steps in k-means algorithm:

Assignment step: Dole out every perception to the group whose mean has the least squared Euclidean separation, this is instinctively the "closest" mean. (Numerically, this implies parcelling the perceptions as indicated by the Voronoi outline created by the methods).

oas
HEAD

Dept of Computer Engg.,
Vidyavardhini's College of
Engineering and Technology,
Vasai Road 401 202



MACHINE LEARNING IN VIDEO SURVEILLANCE FOR FALL DETECTION

¹Snehal Mhatre, ²Amit Kadam, ³Rahul Kucha, ⁴Sangita Chaudhari

¹Student, Dept of Computer Engineering, Vidyavardhini's College of Engg & Tech, Vasai Road, University of Mumbai, Maharashtra, India.

²Student, Dept of Computer Engineering, Vidyavardhini's College of Engg & Tech, University of Mumbai, Maharashtra, India.

³Student, Dept of Computer Engineering, Vidyavardhini's College of Engg & Tech, University of Mumbai, Maharashtra, India.

⁴Assistant Prof & Guide, Dept of Computer Engineering, Vidyavardhini's College of Engg & Tech, University of Mumbai, Maharashtra, India.

Abstract : Falls are the leading cause of injury and death in elderly individuals. Unfortunately, fall detectors are typically based on wearable devices, and the elderly often forget to wear them. We can reduce the impact of fall consequences, if human fall has been detected instantly and proper medical facility is provided. Our detector combines algorithms (background subtraction) as input to a machine learning algorithm with high detection accuracy. Tests conducted on the different fall videos. We present here a unique video data set which will be very useful for the community to test the fall detection. This video data set contains different falls and normal daily activities acquired in realistic conditions. The use of computer vision systems offers a solution to analyze people behavior and detect events and different falls. It is also based on the combination of motion history image and the shape of human in variation in the dataset. It provides the results on video sequences of daily activities and falls.

Keywords – Fall detection, Video Sequence for fall detection, Machine Learning, Artificial Intelligent, Deep Learning.

1 INTRODUCTION

One of the greatest danger for old people living alone are the falls. Almost 62% of injury-related hospitalizations for seniors are the result of falls [1]. And the gravity of the situation can increase if the person can not call for help. Usually, wearable fall detectors like accelerometers [2, 3], gyroscopes [4] or help the buttons [5] are used to detect falls. But seniors often forget to wear them, and a help button is useless if the person is unconscious after the fall for long period of time. Moreover, these sensors need a battery regularly replaced or recharged for adequate functioning. Therefore, a new and promising solution for fall detection is the use of computer vision, as no sensors need to be worn along with this technology. To overcome these limitations, we use a computer vision system which doesn't require that the person wears anything.

1.1 RELATED WORK

One of the greatest danger for old people living alone are the falls. Almost 62% of injury-related hospitalizations for seniors are the result of falls [1]. And the gravity of the situation can increase if the person can not call for help. Usually, wearable fall detectors like accelerometers [2, 3], gyroscopes [4] or help the buttons [5] are used to detect falls. But seniors often forget to wear them, and a help button is useless if the person is unconscious after the fall for long period of time. Moreover, these sensors need a battery regularly replaced or recharged for adequate functioning. Therefore, a new and promising solution for fall detection is the use of computer vision, as no sensors need to be worn along with this technology. To overcome these limitations, we use a computer vision system which doesn't require that the person wears anything.

1.2 SYSTEM OVERVIEW

1. **Motion History Image (MHI):** Our method is based on the fact that the motion is large when a fall occurs. So, the first step of the system is to detect large motion of the person on the video dataset using the Motion History Image of the person.

2. **Change in the Human Shape:** When a motion is detected, we analyze the shape of the person in the video sequence (dataset). During a fall, the human shape changes and, at the end of the fall, the person is generally on the ground with few and or small body movements. A change in the human shape can discriminate if the large motion detected is normal (e.g.: the person walks or sits) or abnormal (e.g.: the person falls, forward or backward).


HEAD
Dept of Computer Engg.,
Vidyavardhini's College of
Engineering and Technology,
Vasai Road 401 202



AUTOMATED DATA ENTRY USING OCR

¹Sangita Chaudhari, ²Pooja Solanki, ³Tirth Trivedi, ⁴Pratik Wadekar

¹Assistant Professor, ²Student, ³Student, ⁴Student

¹BE Computer Engineering,

¹Vidyavardhini's College of Engineering and Technology, Vasai West, India

Abstract: Forms serve as the most widely used asset to collect information. Different institutions and organizations use forms to collect information from the other end. In earlier times, paper forms remained the elementary method to collect information. With the passage of time, the mode of collecting information evolved gradually. Currently the data from the users are collected online with the help of various applications and online tools. But still a huge chunk of information is still offline in the paper forms and needs to be transferred online for various purposes. With the idea of storing data in digital form, manually entering the data into the database was the only prevalent method and it consumed a lot of human effort and time. The intention was to transfer the data online with minimum manual work and therefore Optical Character Recognition (OCR) came into the picture. The central idea is that the data from the paper forms which needs to be stored online will be scanned with a device and the digital data from the forms will get converted to machine suitable format (strings) with the help of OCR and image processing techniques. The purpose behind writing this paper is to present the idea of how data entry process can be made easy with help of automated techniques.

Keywords: OCR, data entry, fields, database

INTRODUCTION

Filling out forms is one of the oldest and widely used methods for collecting information in different fields from the applicant. Automating the scanning process of large volume of office data such as cheques, aadhar card forms, driving license forms, new account opening forms, can escalate the office productivity as well as reduce time consumption. With the recent advances in technology, the manual filling of data is widely replaced by computerized data. Almost all the forms and data are submitted online. Also there is a deep requirement that the information collected offline using form filling should be available online for faster access in near future. Data available online can also be easily manipulated. Automation is basically demanded in places such as in income tax offices, banks, post office, municipal department, colleges, university, where large amount of data is to be manipulated. This problem is very recent as there is a rapid emergence of data collection offline. Many researchers are working over this issue and have developed numerous algorithms. Forms that estimate form data and handwritten data automatically are usually more error prone. It is always beneficial to first convey to the system about the form from which data is to be extracted. That is why, handwritten data extraction system which is form specific is more accurate and will extract data with lesser errors. Moreover, it has been observed that in offices the forms that are being distributed are static, which means the fields do not change rapidly over time. So, it is again a good idea to go for a handwritten data extraction system which is form specific.

In majority of the offices data entry is still offline. They are collected over sheet of paper and then typed back into computer manually. Automating this process with the help of computer vision may include several steps. One of the major tasks is extracting the handwritten data from the application form. The extracted data can be used for many purposes for example archiving and documenting. The extracted data can also be given to optical character recognition engine to convert it to corresponding Unicode number. This will help organize data and may improve data processing.

Recognizing relative locations of information within form is another important process. Some papers suggest that by recognizing lines using Histogram techniques to estimate the location of data, but this may fail if the lines are hiding behind a content occupying several lines at front. This process can be improved if the form format is known. Template matching can be used for analyzing the relative position of data fields and then estimating the location of handwritten data, this will improve the probability of finding required data accurately, reducing false positive results.

Another commonly found element in an application form is straight lines. So their extraction is very important. Straight lines are often found around data to be extracted. Straight line detection problem is often found when we are designing a system where data to be extracted is in a completely unknown form format or there is a very huge skewness or rotation is involved. This problem can be reduced if form format is already known and the user is instructed to perform scanning operation in a controlled environment. This kind of setup will not only improve the accuracy but also increase the flexibility to involve not only the handwritten text data but also signatures, fingerprints, color photographs and so on to be entered into database.

Selection of appropriate feature recognition method is the most important aspect for data extraction from form images. Several methods for feature recognition have been proposed till date.

2. STUDIED SYSTEMS

2.1 A handwritten data extraction system based on common patterns like lines bounding the filled data

Here the system rigorously searches for straight lines in both horizontal and vertical direction and then decides area bounding handwritten data. This approach has limitation over the type of form that it can recognize. The entered data must be inside bounding rectangle, forms having straight lines or no lines can be difficult for this system to recognize. Though this method has good flexibility over handling scaling and skew, but it may consume more time as it requires running a CPU intensive operation like line detection using Hough line transform.

QUESTION PAPER GENERATOR

¹Sangita Chaudhari, ²Sanjeevkumar Sharma, ³Sameer Yadav, ⁴Kaushal Sheth

¹ Assistant Professor, ² Student, ³ Student, ⁴ Student

¹ BE Computer Engineering,

¹ Vidyavardhini's College of Engineering and Technology, Vasai West, India

Abstract: Information and intelligence are two vital columns on which development of humankind rise and knowledge has significant impact on operating of society. Student assessment is a crucial part of teaching and is done through the process of examinations and preparation of exam question papers has consistently been a matter of interest. Present-day technologies assist the teacher to stock the questions in a computer databases but the problem which emerges is how the present day technologies would also assist the teachers to automatically create the variety sets of questions without worrying about the quality of the question paper generated. Hence there appears a requirement to have a system which will automatically create the question paper from teacher entered description within few seconds. Our proposed system follows a crowdsourcing model which allows a group of contributors to contribute questions which ensures a database consisting of a wide range of quality questions.

Keywords – Crowdsourcing model

1. INTRODUCTION

In today's current ambitious world, an examination plays a crucial role in checking the academic development of students and the era of information technology is now substituted by productive application of the technology. So producing utility from knowledge is crucial for development of society into an Information Society. For various examinations conducted in a year in any academic course, teachers need to create variation of question papers as per the University guidelines and assessment requirements. It is very difficult for the teachers to cover all features of the course outcomes and evade duplication of questions in the succeeding exams. There is no systematic procedure and hence the quality of the question paper relies entirely on an individual teacher's experience and proficiency. At times, this entire element may degrade standard of the question paper. As per research, a quality question paper is a real combination of questions supervised by varied criteria such as difficulty level, distribution of marks across the question paper in form of paper pattern and the type of examinations. We aim to generate a quality question paper in order to assess the capabilities of students satisfactorily.

2. LITERATURE REVIEW

The system implemented in [2] facilitates automatic generation of question paper from semantically tagged question repository. The system would be useful for institutes, publishers and test paper setters who have a huge repository of tagged questions and need to frequently generate question paper with ease. The system uses exhaustively tagged question repository as an input to the system. User will be asked to enter the values for each tag in the form of lower and upper bounds. The search engine extracts questions from question repository based on the specifications entered by the user. A well tagged question repository contains questions with four tags: topic (content), question type, cognitive level, and difficulty level. We are using Bloom's taxonomy for cognitive level. The problem here will be that if whether the question in the database is faulty or do not conform to the subject maybe a problem. Also, no new question being added in the database, i.e. less variety in the question database.

The system implemented in [3] deals with the gathering, sorting, and administration of a large amount of questions about different levels of toughness from scientific as well as non-scientific subjects related to various classes. The system uses Shuffling algorithm. The main part of the shuffling algorithms is to provide randomization phenomena in question paper generation system, thus different sets of question paper could be generated with less chances of repetition and duplication. But shuffling algorithm doesn't completely remove repetition. The current systems do not provide the facilities to provide unit-wise marks, various cognitive level and difficulty level marks as a constraint to generate the paper.

3. PROPOSED SYSTEM

Our proposed system follows a crowdsourcing model which means a group of people is responsible for building the questionnaire database of our system. We have split the entire question paper generation process into three phases.


HEAD

Dept of Computer Engg.,
Vidyavardhini's College of
Engineering and Technology,
Vasai Road 401 202



IOT BASED RETAIL STOCK MANAGEMENT

A Smart Shelf

¹Nitin Sankhe, ²Chinmayee Pandit, ³Priya Dhodi, ⁴Sunil Katkar

¹Student, ²Student, ³Student, ⁴Assistant Professor

^{1,2,3,4}Department of Computer Engineering,

^{1,2,3,4}Vidyavardhini's College of Engineering and Technology, Vasai (West), India

Abstract: In present time, IoT is a concept that is used everywhere and every time. Mostly in western countries, IoT is a concept which is used in day to day life for applications such as home automation. In India, most of the businesses are based locally as small-scale businesses which are mainly manufacturing and retailing units. But there is very less interaction of technology and small-scale entrepreneur. For a manufacturing unit and retailer, supply and demand is a big issue to manage. Sometimes, there is demand for a product but no sufficient supply of product and sometime there is sufficient supply of a product but there is no demand. Similarly, for a retailer continuously checking for stocks is a challenging task. In this project, we propose that IoT can be used to perform tasks like checking that which product is in demand, which product has no demand, which product has ample quantity, which product has insufficient quantity, so that retailer can get a clear idea which product to order and which not before the stocks run out.

Index Terms - Internet of Things (IoT), Sensor, Shelf.

1. INTRODUCTION

Today, internet plays a major role in every field. Internet is a network where many devices and networks are interconnected. Today, in this time we can't even imagine the world without internet. It has the power of making everything possible. In this era, we will find no person who has never used internet in his/her lifespan. Internet has brought the whole world connected at one point. If we see the statistics, after the introduction of internet to common person and in corporate world, the world has changed tremendously. There are several revolutionary changes brought into businesses after emergence of internet in businesses. Also, with the common man, now with power of internet in his/her hand, he/she can now connect with each and every one intended and can do any operations be it related to money transfer, communication, file sharing, etc. within some seconds and with minimum cost. Thus, Internet plays a major role in each and everything that is happening over the globe, across countries and across continents.

The concept of a network of devices was discussed as early as in 1982, where at Carnegie Mellon university they invented modified coke vending machine. It was the first Internet connected appliance. It was able to report whether the stock of coke cans is full or not and whether the cans are cold or not. Doesn't this sound amazing? Yes, it is. Like such we can also imagine two cars driving on a road, these two cars cannot see each other but they are coming towards each other. By the time, the respective drivers will recognize the threat this two cars will hit each other. Instead of this to happen if these two cars can communicate with each other and tell each other when they will cross each other, so that either they both will decrease their speeds or will change their routes. This would be a miracle. But this is possible with IoT which stands for Internet of Things.

IoT (Internet of Things) plays an important role in this changing technology-based world. IoT is a collection of devices, electrical appliances connected with sensors to each other for exchanging data. As we discussed earlier, IoT is a field which can change the way we live our everyday lives. IoT can change the pace of life with help of Automation, Artificial Intelligence and Machine learning.

Therefore, there are several advances made in this field. An IoT based system takes input from various sensors sends it to cloud storage, analyses the data and gives output which can be accessed on any device from anywhere. In our project, we are using IoT for a retail store management which will help the retailer to monitor and manage the stock in his shop.

2. EXISTING SOLUTION

Currently, in every retail store/supermarket the employee of the store manually checks all the product stock – like how much stock is left on shelf, how much stock is available in inventory. After checking the inventory, the retailer places his order for particular product to any supplier of his choice. After the order is placed, it takes many days to receive the order at retail store. This whole process takes almost a week to complete and if there is high demand for that particular product, at that time there will be guaranteed loss of retailer. Also, this will affect retailer's business revenue if this happens more often.

The other available solution is RFID tags.^[2] RFID tags are placed on the product which are scanned by RFID readers while billing. According to working of RFID tags and its readers, the circuit for every individual product needs to be feeded. When the product is scanned, its quantity is deducted from total quantity. But this also does not allow the retailer to monitor his stocks in advance. Also, this is an expensive as well as complicated solution as RFID tags need to be placed on every product to be billed.

3. PROPOSED SOLUTION

The proposed system is to build an IoT based system that will help the retailers/store managers to efficiently monitor and manage the stocks for their store. The purpose of this system is to maximize the revenue of retail store by integrating the IoT

TWEET SUMMARIZATION: A NEW APPROACH

¹ Sunil Katkar, ²Maitreyee Phadke, ³Anagha Pasalkar, ⁴Vrishali Patil

¹ Assistant Professor, ² Student, ³ Student, ⁴ Student

¹ BE Computer Engineering,

¹ Vidyavardhini's College of Engineering and Technology, Vasai West, India

Abstract: The utilization of online networking is expanding step by step. It has turned into an imperative mechanism for getting data about current happenings around the globe. Among different online networking stages, with millions of clients, twitter is a standout amongst the most prominent social networking site. Throughout the years sentiment analysis is being performed on twitter to comprehend what tweets that are posted mean. The motivation behind this paper is to overview different tweet division and synopsis strategies and the significance of Particle Swarm Optimization (PSO) algorithm for tweet summarization ^{[1][2]}.

Keywords: Tweet Summary, Segmentation, Particle Swarm Optimization

1. INTRODUCTION

Web based life is a stage/innovation that can be utilized for making and sharing different data, which can be gotten to from any side of the world. It is a standout amongst the best doable route through which advertising should be possible, current issues can be known additionally it tends to be utilized to know the point of view of various individuals about a progressing issue far and wide. Throughout the years social networking sites have advanced, one of which is twitter. Utilization of twitter has become immense through the decade. It has been proficiently serving the clients for collaboration what's more, data sharing.

Numerous tweets are posted on twitter on everyday basis, which are analyzed by sentiment analysis to draw outline of feelings communicated by the user on an issue. The problem with sentiment analysis is that there are millions of users with alterations in opinion to test ^[4]. There are additionally reasonable tests to sentiment analysis. It might happen that somebody tweets something that may not be applicable to other people, for this situation summary comes into picture and assumes a huge job. For this different methods have been created by specialists throughout the years ^[3] some of which are talked about in later module 2.

For providing users with better outcomes tweets are outlined as well as they are first segmented. Segmentation helps in monitoring semantic significance of tweet. Tweets are divided (i.e isolated into parts) utilizing different strategies are likewise talked about in module 2.

There are various clustering algorithms available. One such ideal clustering algorithm is the Particle Swarm Optimization (PSO) Algorithm. This paper further reviews how PSO can be utilized for clustering. It also depicts how it is superior to other clustering algorithms in module 3. Module 4 is the Examination table for the literature overview done. The last module V finishes up the review with end pursued by the references.

2. RESEARCH METHODOLOGY

A considerable amount of Tweets are posted on twitter on everyday schedule. On a large number of the occasions it happens that an individual may tweet something unessential, and due to this, understanding what the user intends to state becomes very difficult. For this reason, summarization and segmentation are utilized. The reasons for these are to draw an outline from the tweets posted by the user and mime his/her feelings. Segmentation is division of tweets into significant sentences and picking up their implications ^[5] while, summarization clusters a group of comparable tweets and draws a rundown from these groups and gives it to the user.

Various summarization and segmentation methods have been developed by scientists over the years few of which perform both segmentation and summarization together on a tweet ^[7] or some either of the one. The different methods for summarization incorporate various clustering algorithms like K-means, ACO, and so forth. A few of these strategies are also used for graph formations of a cluster for similar tweets ^[3]. Different segmentation methodologies use frameworks like the Hybrid-seg framework for segmentation. Tweets are fragmented thinking about a few components like the grammatical features, etymology, and so forth. These portions are then looked for locally as well as globally, for which they make utilization of lexicons like the word-net. Following are a few papers which deliberate a portion of these systems ^{[4][5][6]}.

2.1 A Graph Based Clustering Technique for Tweet Summarization ^[1].

Twitter is a prominent person to person communication site used by millions to share information. A user can find tweets related to any event; however it winds up evidently troublesome for the user to examine all of the tweets. This paper

DECENTRALIZED CROWD FUNDING APPLICATION USING EHTEREUM BLOCKCHAIN.

¹ Shreenidhi Acharya¹, Kalindi Parekh², Eshaanee Saraiya¹, Sweety Rupani⁴

¹Student, Dept of Computer Technology, Vidyavardhini's College of Engg & Tech, Vasai Road, University of Mumbai, Maharashtra, India.

²Student, Dept of Computer Technology, Vidyavardhini's College of Engg & Tech, University of Mumbai, Maharashtra, India.

³Student, Dept of Computer Technology, Vidyavardhini's College of Engg & Tech, University of Mumbai, Maharashtra, India.

⁴Assistant Prof & Guide, Dept of Computer Technology, Vidyavardhini's College of Engg & Tech, University of Mumbai, Maharashtra, India.

Abstract: Crowdfunding is the use of small amount of capital from a large number of individuals that provides funding to a business venture, for an entrepreneurship or for any social as well as medical causes. Crowdfunding is already a rage in the western countries and is now gaining immense popularity in India. In our project we propose a paradigm for developing crowdfunding using a decentralized Ethereum blockchain. The project caters us with the functionalities of a primitive level crowdfunding platform coupled with the potential advantages of blockchain technology.

Keywords – Crowdfunding, Blockchain, Donations, Transparency.

1 INTRODUCTION

Crowdfunding is the practice where in a crowd of people invest meagre amounts which would culminate to a large amount of capital to fund for a particular cause or sponsor a specific venture. Crowdfunding makes use of networking through social media platforms like Facebook, Telegram, Instagram, Twitter and other crowdfunding websites to attract a huge and diverse crowd of entrepreneurs, investors and common folk who aspire to serve, contribute and invest in a particular campaign. The person or organization who initiates a cause (campaign) or the entity who is in need of certain amount of funds is termed as a campaigner. Apart from the campaigner's relatives, friends and immediate family members, crowdfunding provides a wider reach and an easier access to people across the globe to donate. Many crowdfunding projects give out rewards in terms of monetary gains or finished products. Contributors may get to participate in the release or successful deployment of a new product or receive a valuable return for their investment. For instance, the maker of an innovative watch may decide to gift free samples to a limited group of investors. The donors of the campaign may receive a certain percentage of the total campaign amount provided that the campaign is successful.

Gamers invest in new video games and obtain a copy of the new releases. In the present scenario Kickstarter is one of the most popular and notable crowdfunding platforms present till date: since its inception in 2009, more than 135,000 projects have been successfully funded on the crowdfunding site, with more than \$3.5 billion dollars pledged across all Kickstarter projects. Indiegogo started as a crowdfunding site initially focused exclusively on raising money for independent films, but began accepting projects from any category a year after its launch in 2007.

1.1 PROBLEMS IN EXISTING SYSTEM

There are innumerable successful platforms like Milaap, Ketto, Indiegogo etc. which have provided an innovative technique to collect funds. But these companies require users to trust the third party and furthermore there is no clear transparency and the cost of these services are quite high. One of the root problems of the conventional crowdfunding platforms is their dependencies on third party and lack of transparency in their transactions. With the help Blockchain Technology, we aim to eliminate the need of a third untrusted party by providing immutable transactions. The project highly focuses on providing transparency. The problem with the established crowdfunding companies is that they are centralized bodies, charging high fees and also influencing the projects. Crowdfunding based on Blockchain Technology is set to be a game changer because as it will decentralize the funding model from the likes of Kickstarter and other companies as well as lower additional costs.


HEAD
Dept of Computer Engg.,
Vidyavardhini's College of
Engineering and Technology,
Vasai Road 401 202





Genetic Syndrome Identification: An Image Processing Approach

Archana P. Ekbote¹ and Varsha R. Ratnaparkhe²

¹Department of Electronics & Telecommunication Engineering, Vidyavardhini's College of Engineering & Technology, Vasai Road (W), Thane 401202, Maharashtra; ²Department of Electronics & Telecommunication Engineering, Government College of Engineering, Aurangabad, Aurangabad 431005, Maharashtra

ABSTRACT

Genetic syndromes often cause intellectual disability and facial dysmorphism. These dysmorphic facial characteristics provide distinct information which can be used in the identification of various syndromes. However, identification of dysmorphism using a computer is complex since it involves scientifically measuring the facial features and correlating with pathological proportions. Here we describe our work on image-based screening for dysmorphic children which uses the basic concept of symmetry and geometry of the human face. Frontal face images are used to facilitate syndrome identification. Various facial landmarks are selected, different angles and distances are computed for normal and affected face images. It was observed that Support Vector Machine with Radial Basis Function kernel (SVM-RBF), Linear Discriminant Classifier (LDC), and Quadratic Discriminant Classifier (QDC) are suitable to classify the faces and bucket them in dysmorphic and non-dysmorphic categories. Maximum classification accuracy achieved is 89.19% by Linear Discriminant Classifier.

KEYWORDS

Classifier; Facial and anatomical landmark; Feature extraction; Syndrome

1. INTRODUCTION

Genetic syndromes cause abnormalities in internal body organs as well as in the facial appearance of an individual. Generally, abnormalities are related to the heart, blood vessel, denture, kidney, face, etc. Typical abnormalities related to face are long face, large prominent ears, broad forehead, short nose with a broad lip, wide mouth, etc. [1]. Facial features are prominent discriminating factors in identifying a person with the syndrome. Typical known syndromes affecting facial features are Fragile X syndrome, Williams Syndrome, Prader-Willi syndrome, Down syndrome, Mucopolysaccharidosis III, Cornelia de Lange Syndrome, Cri-du-chat Syndrome, Smith-Lemli-Opitz Syndrome, etc. [1]. Some of these syndromes can be diagnosed before birth (prenatally) or after birth (postnatally). Prenatal tests involve some risk to mother and foetus. They are very uncommon. Diagnosis after birth is generally based initially on physical signs of the syndrome and delayed development which includes delay in speech and language skills, motor skills like walking, running, etc. To support the diagnosis, chromosomal test and genetic test are performed which are costly and time-consuming [2]. Healthcare infrastructure in rural India is severely resource constrained. Constraints are in terms of both physical resources and medical skills. Early detection of dysmorphism in children is one such unaddressed issue arising out of these concerns. Early screening could possibly help these children to lead a reasonably

better quality of life. In this simulation-based experimental study, a simple non-invasive method is proposed to identify the syndrome at a low cost. This algorithm has a potential to be a diagnostic tool after further experimentation and study. At this stage, the present work may not be used directly in human health diagnostics and patient management.

Algorithms to work on face images are available but are mainly for recognition of faces and Content-Based Image Retrieval (CBIR). Typical work on face recognition is based on faces with various angles [3], Facial Action Coding System (FACS) and Local Binary Pattern (LBP) [4], low-rank sparse representation [5]. In Ref. [3], the algorithm is based on the combination of Approximate Dynamic Programming (ADP) called Action-Dependent Heuristic Dynamic Programming (ADHDP) and Particle Swarm Optimization (PSO). This method is used to recognize faces with various angles. In Ref. [4], facial expression recognition is based on FACS and "Uniform" LBP to represent facial expression from coarse to fine. In Ref. [5], Low-Rank Sparse Representation-Based Classification (LRSRC) method was used for robust face recognition. In Ref. [6], authors proposed a method for automatic localization of facial landmarks for expressive images. In Ref. [7], facial landmark detection method was proposed by authors for different head poses and occlusion. This work proposes different measurements on face

HEAD

Dept. of Information Technology
Vidyavardhini's College of
Engineering and Technology,
Vasai Road 401 202.



Contents lists available at SCCE

Journal of Soft Computing in Civil Engineering

Journal homepage: www.jsoftcivil.com



Estimation of Building Construction Cost Using Artificial Neural Networks

V.B. Chandanshive^{1*}, A.R. Kambekar²

1. Research Scholar, Civil Engineering, SPCE, Andheri (West), Mumbai 400058, Maharashtra, India

2. Associate Professor, Civil Engineering Department, SPCE, Andheri (West), Mumbai 400058, Maharashtra, India

Corresponding author: a_kambekar@spce.ac.in

 <https://doi.org/10.22115/SCCE.2019.173862.1098>

ARTICLE INFO

Article history:

Received: 04 March 2019

Revised: 25 June 2019

Accepted: 25 June 2019

Keywords:

Artificial neural network;

Cost predictions;

Early stopping;

Regularization;

Training functions;

Hidden layers.

ABSTRACT

The cost estimation of the building construction projects at initial stages with a higher degree of accuracy plays a vital role in the success of every construction project. Based on the survey and feedback of the design professionals and construction contractors, a dataset of 78 building construction projects was obtained from a mega urban city Mumbai (India) and geographically nearby region. The most influential design parameters of the structural cost of buildings (Indian National Rupees: INR) were identified and assigned as an input and the total structural skeleton cost (INR) signifies the output of the neural network models. This research paper aims to develop a multilayer feed forward neural network model trained along with a backpropagation algorithm for the prediction of building construction cost (INR). The early stopping and Bayesian regularization approaches are implemented for the better generalization competency of neural networks as well as to avoid the overfitting. It has been observed during the construction cost prediction that the Bayesian regularization approach performance level is better than early stopping. The results obtained from the trained neural network model shows that it was able to predict the cost of building construction projects at the early stage of the construction. This study contributes to construction management and provides the idea about the entire financial budget that will be helpful for the property owners and financial investors in decision making and also to manage their investment in the volatile construction industry.

How to cite this article: Chandanshive VB, Kambekar, AR. Estimation of building construction cost using artificial neural networks. J Soft Comput Civ Eng 2019;3(1):91-107. <https://doi.org/10.22115/SCCE.2019.173862.1098>.

2588-2872/ © 2019 The Authors. Published by Pouyan Press.

This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).





State-of-the-art technology in variable compression ratio mechanism for spark ignition engine

ASHISH J CHAUDHARI, VINAYAK KULKARNI and NIRANJAN SAHOO*

Centre for Energy, Indian Institute of Technology Guwahati, Guwahati 781 039, India
e-mail: shock@iitg.ernet.in; shock@iitg.ac.in

MS received 31 May 2017; revised 20 March 2018; accepted 16 July 2018; published online 3 December 2018

Abstract. Present investigations deal with development of a novel variable compression ratio (VCR) mechanism and its implementation in a small and relatively large size single-cylinder engines. Operation of this mechanism is found to be smooth and effective in the running condition of the engine as well. This mechanism, when incorporated in the small size spark ignition HONDA engine, portrayed improvement in engine performance with increment in compression ratio (CR) for petrol and kerosene. Their respective optimum CRs 5.02 (petrol) and 5.27 (kerosene) are higher than the base value 4.8. In case of large size KIRLOSKAR engine, the present VCR mechanism is found to be useful while operating with liquefied petroleum gas (LPG), where measurements showed that combustion duration is lower with LPG for CR 9.79 as compared with base value 9.0. The present experiments clearly demonstrate the usefulness of VCR mechanism in improving engine performance for a given fuel and broadening the range of alternative fuels burnt in the engine. Ease of fabrication, simplicity in installation, accessibility in troubleshooting and smooth run-time alterations are the advantages with the current novel mechanism.

Keywords. Variable compression ratio; spark ignition engine; ball screw assembly; engine head modification; clearance volume.

1. Introduction

The internal combustion (IC) engines are used across a range of vehicles from passenger cars to heavy transport vehicles and for power farm equipment. In view of such extensive use of the IC engines, many governments and allied organizations are insisting for innovations to adapt fuel-economy standards. Variable compression ratio (VCR) is one of the promising technologies considered to enhance the performance of the engine and thereby achieve fuel economy. Provision of the VCR attachment is essential to vary the compression ratio (CR), especially for spark ignition (SI) engines, where “knocking phenomenon” limits the performance. Besides, these Otto-cycle-based IC engines, used in most of the applications, have fixed CR. This constraint limits the engine performance with uncontrolled usage of a given fuel and narrows down the type of fuels to be burnt in the engine. VCR technology broadens the application envelope of the engine by improving its performance for a given fuel and facilitates flexibility of use of various fuels. Thus, ability to vary the CR reduces the dependence on a particular fuel. Moreover, it improves the engine performance for the same maximum possible

cycle temperature and load conditions with use of a particular fuel.

Over the past few years, various companies have developed several prototypes related to VCR engine, although those products are not yet realized in large scale. However, development of some mechanisms for VCR is the outcome of all those efforts. In the year 1924, the VCR concept was first put forth by Matson [1] using a compensating connecting rod for varying the CR, and later by Kratzer [2] in 1942 through development of a VCR engine. Then, in 1956, Mansfield [3] worked on a piston-enabled mechanism for VCR in IC engine. Among all the developments so far, the notable ones are based on modification in cylinder head [4] and crankshaft side [5, 6]. A “Pressure Reactive Piston (PRP)” technology with modification of the piston geometry has also been developed [7]. Here, the CR varies with the increase or decrease of cylinder pressure.

Implementation of VCR mechanism for performance analysis of an engine has also been a topic of research in the open literature. Caris and Nelson [8] conducted experiments on a series of eight-cylinder engines to understand the effect of CR on volumetric efficiency, mean effective pressure and indicated thermal efficiency using gasoline. The best performance of the engine has been reported at an intermediate CR. Abdel and Osman [9] studied the effect of varying the CR on the engine performance with different

*For correspondence

International Journal of Computer Engineering & Technology (IJCET)

Volume 9, Issue 6, November-December 2018, pp. 181–188, Article ID: IJCET_09_06_019

Available online at

<http://www.iaeme.com/IJCET/issues.asp?JType=IJCET&VType=9&IType=6>

Journal Impact Factor (2016): 9.3590(Calculated by GIS) www.jifactor.com

ISSN Print: 0976-6367 and ISSN Online: 0976-6375

© IAEME Publication.

GENETIC SYNDROME DETECTION USING RADON TRANSFORM AND BIT PLANES

Archana P. Ekbote, Varsha R. Ratnaparkhe

Department of Electronics & Telecommunication Engineering

Government College of Engineering Aurangabad, Maharashtra, India 431005

Dr. Babasaheb Ambedkar Marathawada University, Aurangabad, Maharashtra, India

ABSTRACT

Genetic syndromes develop different symptoms. One of the commonly observed symptoms is facial dysmorphisms. Hence syndromes may be detected based on facial images. This paper proposes a Radon transform based method for detection of facial dysmorphism. Detection results were improved using bit plane slice approach. Most significant four bit planes of Radon transformed image are proposed to be used for feature extraction. Linear Discriminant Classifier (LDC) and Quadratic Discriminant classifier (QDC) were used for classification. Comparing the results of Radon transform and Radon transform and bit plane slicing, it is observed that accuracy is more by 2.71% using QDC and 10.81% using LDC in later case.

Keyword: Radon transform, Bit plane slicing, Genetic syndromes.

Cite this Article: Archana P. Ekbote and Varsha R. Ratnaparkhe, Genetic Syndrome Detection Using Radon Transform and Bit Planes. *International Journal of Computer Engineering & Technology*, 9(6), 2018, pp. 181–188.

<http://www.iaeme.com/IJCET/issues.asp?JType=IJCET&VType=9&IType=6>

1. INTRODUCTION

In most cases genetic syndromes result in changes in physical appearance as well as psychological conditions. Physical changes are in terms of structural malformation associated with face and other body parts. Syndromes like William- Beuren syndrome result in broad forehead, short nose with a broad lip and wide mouth, Prader-Willi syndrome result in narrow face, almond-shape eyes, Fragile X syndrome result in long face, large prominent ears [1]. Hence analysis of facial structure may lead to diagnosis of genetic diseases. Due to technological advancement, computer based systems using image processing and pattern recognition theory have been searched for detection of genetic syndrome. Analysis of face images is the key to identify syndrome in computer based systems.

From last decade, genetic syndrome detection has been explored by extracting texture features using Local Binary Pattern (LBP) and Gabor wavelet transform. Zhao Q. et.al. in [2] proposed a method using LBP to detect Down syndrome affected patients from healthy