VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"IMPLEMENTATION OF GNSS-SDR AND ITS APPLICATION FOR PPP AT AIET"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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HARSHITHA N P	4AL15EC030

Under the Guidance of
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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2018-2019

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

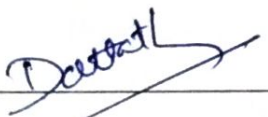## MOODBIDRI – 574 225

(Affiliated to VTU, BELAGAVI)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

Certified that the project work entitled "IMPLEMENTATION OF GNSS-SDR AND ITS APPLICATION FOR PPP AT AIET" *is a bona fide work carried out by*
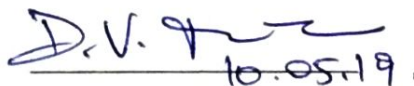
A Shreya	4AL15EC001
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in partial fulfillment for the award of BACHELOR OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Signature of the Guide	**Signature of the H.O.D**	**Signature of the Principal**
Dr. Dattathreya	Dr. D V Manjunatha	Dr. Peter Fernandes

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PRINCIPAL
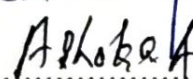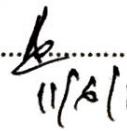Alva's Institute of Engg. & Technology,
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1. Dattathreya

2. Ashoka K

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ABSTRACT

The software defined radio technology is modern and state-of-art cost efficient technology having enormous advantages from Hardware based receivers. GNSS-SDR works in software mode for digital receiver blocks in real time consisting of baseband digital signal processing, signal acquisition and tracking decoding the navigation message and computing the observables needed by positioning algorithms, which ultimately compute the navigation solution. Real-time Precise Point Positioning requires several analysing and plotting algorithms to evaluate results such as positioning error, ionospheric and tropospheric delays, receiver clock estimation, satellite number, dilution of precisions etc. Project aims to implement a Software Defined Receiver for receiving GNSS data using USRPx310 hardware (available at NARL) and python-based software defined radio.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON
DEVELOPMENT OF AUTOMATIC KANNADA SPEECH RECOGNITION SYSTEM

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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MOODBIDRI – 574 225.

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(Affiliated to VTU, BELAGAVI)

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Certified that the project work entitled "DEVELOPMENT OF AUTOMATIC KANNADA SPEECH RECOGNITION SYSTEM" is a bona fide work carried out by

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Name of the Examiners

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2. Ashoba A

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ABSTRACT

Speech recognition is a software invention that allows the user to interact with their mobile devices through speech. It is simply an application that enables a machine to single out words or phrases in a spoken language, thereafter it converts them to a machine-readable format. Speech recognition is designed with the sole purpose of creating text from speech, so instead of typing through a keypad, users talk to the device which has programs that type the text. In this project, the system for Automatic Kannada speech recognition is developed. Kannada is a language spoken in India predominantly in the state of Karnataka and is spoken by about 60 million speakers. This language is also spoken in neighboring states like Maharashtra, Tamil Nadu, Andra Pradesh, Goa etc. However, there is only little research reported on Kannada speech processing compared to other languages of similar importance.

The implementation of speech recognition system for Kannada words has been carried out using Hidden Markov Toolkit in the Linux platform. The criteria for designing Automatic speech recognition system for Kannada speech are data preparation, pre-processing filter, feature extraction techniques, training and testing the system for performance evaluation. The system to be built, requires all of the speech recorded from scratch and to do this, scripts are needed to prompt for each sentence. The training data includes the prompt scripts which will be used in conjunction with a pronunciation dictionary to provide the initial phone level transcriptions needed to start the HMM training process. The Testing is done after the completion of training in order to evaluate the performance of the system. This system has several applications in the field of voice control, command control, automation and can be interfaced with the other applications which takes text as input.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DETECTION OF OBSTRUCTIVE SLEEP APNEA"

Submitted in partial fulfillment of the requirements for the award of degree

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Certified that the project work entitled "DETECTION OF OBSTRUCTIVE SLEEP APNEA" *is a bona fide work carried out by*

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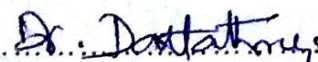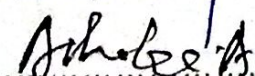Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

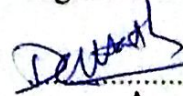**Signature of the Principal**
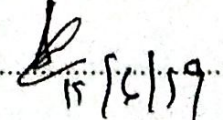Dr. Peter Fernandes
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Name of the Examiners

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1. Dr. Dattathreya

2. Ashalee A

ABSTRACT

Sleep disorders are the most common health condition that can influence various aspects of life. Obstructive sleep apnea is one of the serious sleep disorder, which causes the breathing to repeatedly start and stop during sleep. In many countries these kind of disorder is generally analyzed in sleep laboratories by the traditional detection process called Polysomnography. Most of the apnea disease are currently not analyzed properly because of high cost of the test and the limitations of overnight sleep in the laboratories, where an expert human observer is needed to work over night. The aim of the project is to provide proper detection which enables the doctors to provide the medical help necessary thereby decreasing the number of deaths due to obstructive sleep apnea. The ECG analysis program can provide much information about cardiac disorder. Therefore, computer-based techniques is developed for ECG analysis and can used to train inexperience staff and pre diagnostic the ECG data. In this project, the ECG analyzing algorithm for obstructive sleep apnea detection is applied using MATLAB. Parameter used in this project is QRS complex. The detection of RR interval and conversion of RR interval to heart rate (minute by minute) are developed. ECG analyzing program is easy to use. This can be done by loading the ECG data to analyze the necessary value for apnea detection.

In present different techniques are used for detecting the minute based analysis of OSA by Electrocardiogram (ECG) signal processing. Using the Physionet apnea ECG database, QRS complex is detected by Pan-Tompkins algorithm. Feature like Mean, Standard deviation and covariance is extracted from the output of the QRS complex and has been used to classify the apnea and non-apnea events from the features extracted. In the proposed system a program is written to identify features from an ECG signal and detect apnea and non-apnea. To test the program, data files (in .mat format) taken from Physio Bank ATM of apnea ECG database are used. These files are loaded to MATLAB and loaded ECG records are been segmented into separate in minute by minute for further analysis. Then, signal is used to obtain the peaks of the signal. The peaks are marked using certain symbols. After the peak detection is done the index and the amplitude values of the signal are determined. Based on the values obtained the presence or absence of apnea is classified.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"SPECIAL PURPOSE MACHINE TO IMPROVE EYE-HAND COORDINATION FOR SPECIAL CHILDREN"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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(Affiliated to VTU, BELAGAVI)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

Certified that the project work entitled "SPECIAL PURPOSE MACHINE TO IMPROVE EYE HAND COORDINATION FOR SPECIAL CHILDREN" *is a bona fide work carried out by*

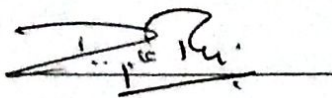|	
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in partial fulfillment for the award of BACHELOR OF ENGINEERING in ELECTRONICS & COMMUNICATION ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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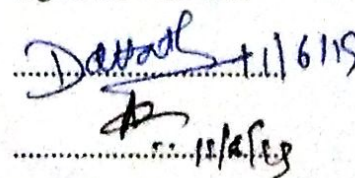**Signature of the Principal**

Dr. Peter Fernandes
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EXTERNAL VIVA

Name of the Examiners

1. Dr. Dattathraya

2. Ashoka A

Signature with date

ABSTRACT

Irrespective of physical and mental situation every child must get an opportunity to learn alongside playing. Unfortunately this does not holds well in case of children with special need. The actual challenge comes into picture during the initial phase of learning. In most of the cases the incorporated traditional methods fails to get the attention of the child throughout the therapy session and they are quite human resource intensive. Teaching the special children within stipulated time with more efficiency and interactive manner with precise and modeled results is quite a challenge in itself.

Analyzing all the above problems the device has been developed which can train and enhance gross motor skills, eye-hand coordination and is an attention seeking device. The device houses a powerful microcontroller unit which handles complex algorithms and tasks with highest efficiency and precision. This design has visual, audio as well as a tactile (vibration) feedback associated with individual tasks to make every task interesting and interactive for the children. The designed device is light-weight, highly durable and a well-built with all the safety protections along with the precautions.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

IOT AND ARDUINO BASED SOLDIERS HEALTH MONITORING AND POSITION TRACKING SYSTEM

Submitted in partial fulfillment of the requirements for the award of degree

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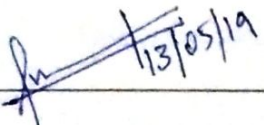### (Affiliated to VTU, BELAGAVI)

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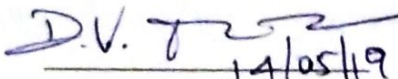
CERTIFICATE

Certified that the project work entitled "IOT AND ARDUINO BASED SOLDIERS HEALTH MONITORING AND POSITION TRACKING SYSTEM" *is a bona fide work carried out by*

BINDU M D	4AL14EC019
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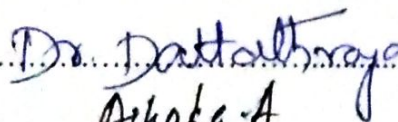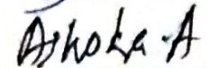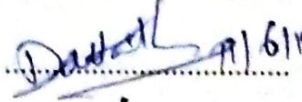
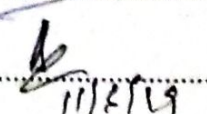**Signature of the Principal**
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Name of the Examiners

1. Dr. Dattathraya
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ABSTRACT

In current world scenario the security of a nation is the uttermost important factor and hence enemy warfare plays an important role. The security of any nation depends on the military, army air-force and navy of the country and the backbone of all these forces are our soldiers. Without the soldier it would be nearly impossible to protect a nation. But there are many concerns revolving around the security of these soldiers, especially the army soldiers. Even today when the world is at its prime for technology development, the army is still using rudimentary techniques especially when navigation technology is taken into consideration. When the soldier enters into the war zone, it is essential for the base station to determine the exact location and the health status of the soldier and hence more emphasis should be given to navigation and health monitoring technology for the soldiers in the war torn zone.

In this project the exact location and the health status parameters of the soldier can be sent to the base station in real time so that the appropriate actions can be taken in case of crisis. This technology helps to minimize the rescue, time and search operation effort of army rescue control unit. This system uses GPS module and wireless body area sensor network to record all parameters in real time and send it to the base station. The different types of sensors used in this system are the humidity sensor, temperature sensor and pulse sensor which help in deciding the health status of that particular army official. This is a wearable technology which is the most important factor of this project.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"TOUCHSCREEN BASED ADVANCED MENU DISPLAY AND ORDERING SYSTEM FOR RESTAURANTS"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
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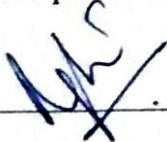### (Affiliated to VTU, BELAGAVI)

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Certified that the project work entitled "**TOUCHSCREEN BASED ADVANCED MENU DISPLAY AND ORDERING SYSTEM FOR RESTAURANTS**" *is a bona fide work carried out* by

AMITKUMAR KONNUR	**4AL15EC007**
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in partial fulfillment for the award of BACHELOR OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Signature of the Guide

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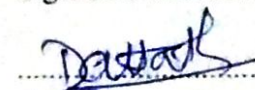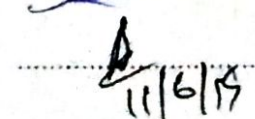EXTERNAL VIVA

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Name of the Examiners

1. Dr. Dattathreya

2. Ashoka A

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11/6/19

ABSTRACT

The project mainly aims in designing completely automated menu in restaurants with the help of touchscreen and a graphical LCD to provide a user friendly environment. There is no need of a person to take the order from the table. The menu will be displayed automatically on the table and customer can directly order the menu with the help of touchscreen. Touchscreen provide fast access to any and all types of digital media, with no text-bound interface getting in the way. Faster input can mean better service. Using a touch interface can effectively increase operator accuracy, reduce training time, and improve overall operational efficiencies, a properly designed touch interface cam improves each operator's accuracy. Touchscreens are practical in automation, which has become even simpler with touchscreen technology. Owners familiar with the icon system appreciate screens that make automation systems user friendly.

The system consists of Wi-Fi module, which is interfaced with the input and output modules, the I2C converter acts as an intermediate medium between Wi-Fi module and LCD display. So the Wi-Fi module can be termed as a control unit. The input module is nothing but a touch screen which have graphical image display, which takes the input from the user. The output module is LCD display which makes the communication between system at table and system at manager department. The Wi-Fi module also takes the responsibility to display the menu items on the graphical LCD. At the receiving end the selected items will be displayed on LCD.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"PERFORMANCE IMPROVEMENT OF DIRECT MENTHANOL FUEL CELLS USING MODIFIED NAFION MEMBRANE"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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ANANYA M	4AL15EC008
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in partial fulfillment for the award of BACHELOR OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING**   of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

D.V.T 06/05/19	D.V.T 06/05/19	
Signature of the Guide	**Signature of the H.O.D**	**Signature of the Principal**
Dr. D V Manjunatha	Dr. D V Manjunatha	Dr. Peter Fernandes
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1. Dr. Dattathreya

2. ASHOKA-A

ABSTRACT

The Direct Methanol Fuel Cells (DMFC) is a subcategory of Proton Exchange Membrane Fuel Cells (PEMFCs) in which methanol is used as a fuel. PEMs are important components of fuel cells which conduct protons. In this paper the proposed work provides to use methanol as fuel to realize DMFC. The Membrane Electrode Assembly (MEA) of DMFC is sandwiched between two silicon chips with micro channels consists of a micro-porous Gas Diffusion Layer (GDL) layer which regulates the flow of methanol to the catalyst at the anode, a high efficiency catalyst layer for the generation of protons (H+) and electrons (e⁻) from methanol, a high proton conductance membrane layer for the transfer of protons and a high efficiency catalyst at the cathode for the conversion of oxygen and H+ into water. In modern cells, electrolytes based on proton conducting polymers i.e., electrolyte membranes (e.g., Nafion) are often used, since these cells can be operated under high temperature and pressure.

A 3D DMFC model has been used to analyze the effect of nafion membrane thickness and GDL thickness on the performance in a single fuel cell. At 25°C, the fuel cell has the optimal relative humidity in the PEM, which allows proton to travel from anode to cathode of DMFC. Nafion 117 was coated with various thicknesses of Poly Vinylidene Fluoride (PVDF) polymer and its effect on fuel cell performance was studied. The power density of DMFC PVDF coated Nafion 117 higher than that of native Nafion 117 because, the coating, introduces hydrophobic surface on Nafion 117 and hence, methanol is repelled from nafion surface thereby causing reduction in methanol crossover, which gives better performance when compared to uncoated Nafion 117.The DMFC has lot of advantages, such as low energy consumption, high energy density, simple system, which is easy to carry, storage and supply. The improvement of comprehensive characteristics of proton exchange membrane represents one of the most critical challenges for the large scale commercialization of PEM fuel cells.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"SOLAR PANEL IN PERIODIC FLOW CONTROL"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

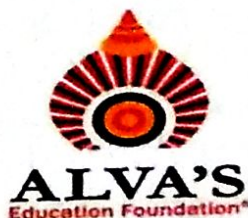| Name	USN
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

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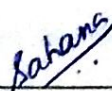
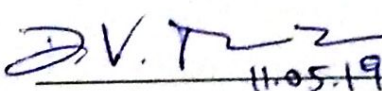|	
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ABSTRACT

Solar panel has been a well-known method of generating clean, emission free electricity. It produces only Direct Current electricity (DC), which is not what normal appliances use. Solar Photovoltaic (PV) systems are often made of solar PV panels (modules) and inverter (changing DC to AC). Solar PV panels are mainly made of solar photovoltaic cells, which have no fundamental difference to the material for making computer chips. The process of producing solar PV cells (computer chips) is energy intensive and involves highly poisonous and environmental toxic chemicals. There are few solar PV manufacturing plants around the world producing PV modules with energy produced from PV. This measure greatly reduces the carbon footprint during the manufacturing process. Managing the chemicals used in the manufacturing process is subject to the factory's local laws and regulations.

The solar panel placed in the periodic flow control model will produce the wind with the maximum velocity, pressure density which can be used for different applications for example the obtained heat & electricity can be used in running the steam engines. The heat is generated inside the model from the dissipated energy from the solar panel. When the wind is allowed to pass through the solar panel its velocity, pressure and density will be changed. The other chemical liquids, gases can also be used in the simulation instead of the wind in the model but it takes long time for simulating so wind has been used for the simulation.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"FACE DETECTION AND RECOGNITION FOR SMART ATTENDANCE SYSTEM USING RASPBERRY PI"

Submitted in partial fulfillment of the requirements for the award of degree

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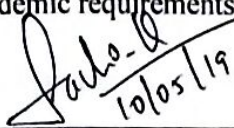### (Affiliated to VTU, BELAGAVI)

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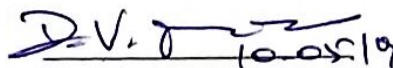
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ABSTRACT

Security is the major threat to an organization or institute that is why there is a need of several specially trained person to attain the desired security to overcome the declining security condition in the country. The person as human being makes mistake that might affect the security, hence there is a need for facial recognition system which is fast, accurate and highly secured real time system which reduces the human errors while taking attendance. Face recognition is one of the most important biometric pattern recognition which is used in broad spectra applications. The main purpose of this project is to develop face detection and recognition for smart attendance system using Raspberry Pi. This system will eliminate the proxy attendance, saves the time and reduces mistakes while taking the attendance.

Raspberry Pi installed with open computer visualization library and a camera module is connected for face detection and recognition, a time period is set for taking attendance and the database is automatically uploaded into the SQLite. Since the inception of pattern recognition and image processing researchers across the globe continue to propose newer facial recognition algorithms. A facial recognition system is a technology capable of identifying or verifying a person from a digital image or a video frame from a video source and face detection is a computer technology being used in a variety of applications that identifies human faces in digital images.

Each of the facial algorithms has its own pros and cons, hence in this project some best algorithms are used to build accurate face detection and recognition model. LBPH, fisherface and haar cascade algorithms are used to detect the faces even with the different light intensities. It maintains the student attendance and reduces the human errors, hence it is one of the best method to take the attendance among other methods. It can be used in the schools, colleges, hospitals, office, malls, roadpaths, airports and security system applications.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON
"OVERLAPPING ACOUSTIC EVENT CLASSIFICATION"

Submitted in partial fulfillment of the requirements for the award of degree

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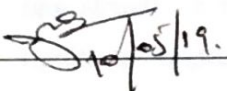### (Affiliated to VTU, BELAGAVI)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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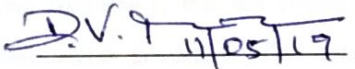
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ABSTRACT

Acoustic is a type of sound, it is important to know not only speech and music, which has been researched but also common sound in day to day environment. Each time sound signal contain a combination of information as a mixture of noise, clean sound and noise like characteristics with flat spectrum have extract audio event from audio signals different acoustic events are selected from sound scene database of Real Word Computing Partnership (RWCP) group. The recognition performance of acoustic events using proposed features and Mel-Frequency Cepstral Coefficients (MFCCs) with clean and noisy test samples are compared. The proposed feature show significantly improved recognition accuracy over MFCCs in noisy have propose an approach MFCC feature extraction technique variable recordings, spectral, cepstral, energy and voicing-related audio features are extracted.

Classification of the overlapping sound events, the Support Vector Machine (SVM) to feature extraction using the statistics that mainly contains Mel spectra where the most relevant feature frame based classification using SVM is a algorithm that analyses the data for classification and recognition it is a important machine learning technique. A sliding window approach is used to obtain statistical functional of the low-level features on short segments. SVM are used for classification of these short segments and majority voting scheme is employed to get a decision for the whole recording for the classification process. The SVM method is a suitable and relatively precise algorithm for the classification of phone ring already on the sampling frequency, but the sound pressure of the background has a significant impact on classification accuracy. The total average classification accuracy reached in train classes as 77% and also in case of tested samples the accuracy is reached as 95% for total for train as 30 classes test as 20 classes have observed from the experimental results that the best separating feature the MFCC features for highly overlapped data distributions.

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PROJECT REPORT ON

"DESIGN AND IMPLEMENTATION OF KOGGE-STONE ADDER USING CADENCE VIRTUOSO PLATFORM"

Submitted in partial fulfillment of the requirements for the award of degree

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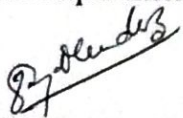### (Affiliated to VTU, BELAGAVI)

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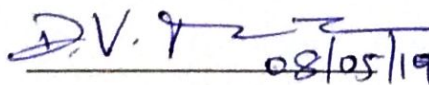
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1. Dr. D.V. MANJUNATHA

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ABSTRACT

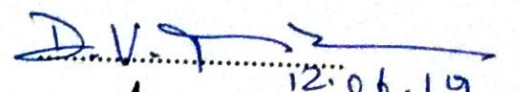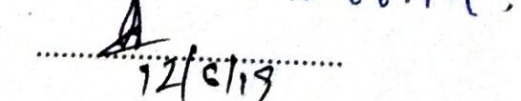In this technical era, high speed and low area of Very Large Scale Integration (VLSI) chip are very essential factors. Day by day, the number of transistors and other active and passive elements are growing on the VLSI chip. In the integral part of most processors, adders play an important role. An adder forms a major part in various arithmetic logical operations. Parallel Prefix Adders (PPA) have been built up as the most essential and efficient circuit for binary addition. Their Particular structure and execution performance are very attractive for VLSI implementation. The Adders are a practically mandatory part of each contemporary digital Integrated Circuit (IC). The essential property of the adder is that it should be primarily faster and efficiency must higher with respect to power utilization and the area occupied. PPA'S are tree based structure which speed up the binary addition, Hence prefix adders are used for fast addition algorithms.

The proposed work of the 32-bit Kogge-Stone Adder (KSA) is designed in front end by using Verilog code and the 8-bit KSA is designed in back end using CMOS logic which includes different modules such as white cell, gray cell and black cell and it is implemented in Cadence Virtuoso platform using 180nm technology. The comparative analysis of the delay and power has been done with previous paper. The experimental result shows that the addition by using KSA reduces power consumption and delay.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON
"DESIGN AND IMPLEMENTATION OF POWER REDUCTION TECHNIQUE IN CMOS VLSI CIRCUITS"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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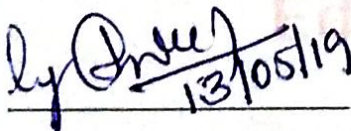### (Affiliated to VTU, BELAGAVI)

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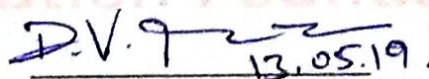
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RAKSHITHA RAO U	4AL15EC068
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SHRADDHA	4AL15EC082

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2. ASHOKA A   12/6/19

ABSTRACT

In (Very Large-Scale Integration) VLSI, it is important to introduce low-power design techniques, which reduces the power consumption of the circuit during normal mode of operation. More power consumption also reduces the battery life of the devices. Therefore, reducing power consumption during normal operation has become a critical objective in today's VLSI circuit designs. Designers have different options to reduce the power consumption in the various design stages. Power dissipation in CMOS circuits can be dynamic or static. Dynamic power dissipation takes place due to switching activities and static power consumption is due to leakage.

The lector technique in combination with sleep and stack technique is used in this project. Two leakage control transistors (a p-type and a n-type) within the logic gate circuit are introduced for which the gate terminal of each leakage control transistor (LCT) is controlled by the source of the other. In this arrangement, one of the LCTs is always near its cut-off voltage for any input combination. This increases the resistance of the path from supply to ground, leading to significant decrease in leakage current. Stack technique is used to store the current state of the transistors whereas sleep technique is used to turn off the circuit when there is no input to given circuit.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DESIGN OF MEMORY INTERFACE AND PROGRAMMER FOR FeRAM"

Submitted in partial fulfillment of the requirements for the award of degree

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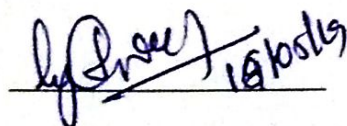
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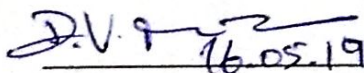
SHRUTHI I T	4AL15EC083
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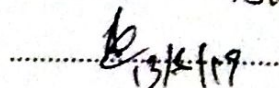
ABSTRACT

The On-board computer of satellite has a PROM (Programmable Read only Memory) which is volatile. PROM in On Board Computer is used to store the Program data for the operation of the various sensors and devices in satellite. Since Software requires constant improvisation, using PROM to store the program data is not feasible. A unique approach is proposed to replace PROM in On-board computer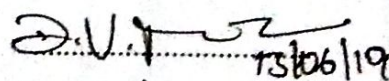. A Memory interface is designed for the targeted FeRAM for storing the program data. FeRAM is a non-volatile memory and has faster access time compared to PROM. Memory Interface circuit is designed using the OrCAD Capture tool with the proper analysis of power requirements. FeRAM is programmed using the Microsemi smart fusion Board. Libero SOC and Soft Console software are used to program the FeRAM. For embedded systems, being able to run native TCP/IP makes it possible to connect the system directly to an intranet or even the global Internet. FeRAM can be programmed by a remote PC connected to internet. To authenticate the data, Checksum is verified after writing the data into FeRAM.

FeRAM has faster access time compared to PROM and high data retention time. This will make the FeRAM ideal to store the program data. The memory interface circuit derives its signal from On-board computer through 78 pin connector and it is designed with the concern of safety of the On-board computer. This unique approach to store program data in FeRAM makes it feasible to use in On-board computer.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"Smart Dustbin: The Waste Segregation and Alert System"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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ABSTRACT

Technology always helps mankind in making life easier. The prime need of a smart lifestyle begins with cleanliness and cleanliness begins with dustbin. Society will get its waste dispatched properly only if the dustbins are placed well and collected well. To properly manage the waste, it has to be handled, segregated, transported and disposed so that it reduces air pollution and also prevents spreading of diseases caused by unpicked waste.

A smart dustbin is designed to sort the trash into metallic waste, wet waste and dry waste. The waste is carried one by one using the conveyer belt and is fed into the main conveyer, where the waste is segregated using wireless sensors. Embedded technology is used to continuously monitor the status of the dustbin and to send an alert message automatically to the concerned authorities once the level of waste in the dustbin crosses the threshold as set by the authorities. It also guides the garbage-trucks to collect the garbage only from those areas where the bin is critically filled. This would save time and money of the authorities considerably.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"THREE IN ONE SMART AGRO DEVICE"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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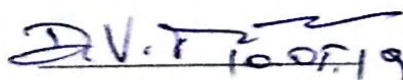
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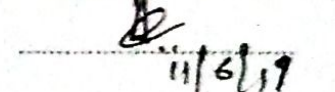
4/6/19

ABSTRACT

The half of the population depends on agriculture for its livelihood. During a sprinkler irrigation water is lost due to wind drift and evaporation. This problem can be seen in fertigation as well as pesticides spraying. Therefore innovative irrigation practices can enhances water efficiency, gaining an economic advantage while also reducing environmental burdens. In some cases the necessary knowledge has been provided by extension services, helping farmer to adapt and implement viable solutions, thus gaining more benefits from this technology.

The existing systems employ SMS based system for keeping the user continuously informed of the conditions of the field. The objective of this project is to design a simple, easy to install embedded circuit to monitor the fertilizer and pesticides to be sprayed which are used to control and optimize them to achieve maximum plant growth and yield. The Arduino will communicate sensors, Bluetooth and GSM module in real time in order to control the irrigation process efficiently inside a field by actuating a motor according to necessary condition of the crop. An integrated LCD is also used for real time display of data acquired from the sensor and the status of the various devices. The design is quite flexible as the software can be modified any time. This makes an efficient system for optimization of yield with minimum use of water. This system is also economical, potable and user friendly.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"SMART MEDICINE REMINDER"

Submitted in partial fulfillment of the requirements for the award of degree

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Signature of the Guide
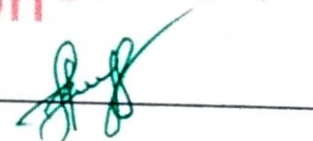**Mr. Santhosh S.**

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ABSTRACT

Management of medication is very important for acute illness and long term conditions. People start getting prone to diseases once they are aged and they even get confused because of complex medication schedule. So there is a need to design an appropriate product that reminds about their medicine dosages. In aged people, due to physical and mental function decline, they need to take number of drugs. In such scenario, management of complex medication is required for avoiding before it seriously affects health. There are several products designed for solving this problem, such as electronic medication reminder device, smart phone reminder applications and many more. However, it is not possible for all elderly people to make use of those devices as they were difficult to understand.

The proposed system will not only help aged people for medication reminder but also helps person who is suffering from alzheimer disease. Proposed system is combination of smart watch and pillbox which will help user to manage complex medication regimes. Patients need not remember their medicine dosage timings as they can set an alarm on their medicine dosage timings. An indicator is placed in pillbox which blinks at particular time to take medicine. The alarm can be set for multiple medicines including time and medicine description.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"Analysis of Antenna Impedance and Radiation Pattern for A Mono-Conical Antenna using MEMS"

Submitted in partial fulfillment of the requirements for the award of degree

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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Certified that the project work entitled "ANALYSIS OF ANTENNA IMPEDANCE AND RADIATION PATTERN FOR A MONO-CONICAL ANTENNA USING MEMS" is a bona fide work carried out by
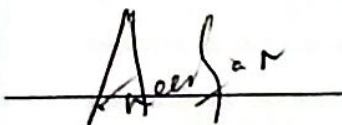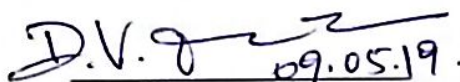
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ABSTRACT

An antenna is used to radiate electromagnetic energy efficiently and in desired directions. Antennas act as matching systems between sources of electromagnetic energy and space and the goal in design of antennas is to optimize this matching. All antennas may be used to receive or radiate energy. The required wideband omnidirectional mono-conical antenna used for reverberation chamber has been proposed. The antenna performance is analyzed using the COMSOL (v5.2) Multiphysics Simulation Tool. The simulation results show that the antenna has a good impedance and omnidirectional radiation characteristics, and It meets the performance requirements of the antenna used for reverberation chamber. The proposed antenna shows the measured value of VSWR within 0.2-1.5 GHz is less than 20dB which is in accord with the theoretical value.

Conical antennas are useful for many applications due to their broadband characteristics and relative simplicity. This example includes an analysis of the antenna impedance and the radiation pattern as functions of the frequency for a mono conical antenna with a finite ground plane and a 50 Ω coaxial feed. The rotational symmetry makes it possible to model this in axially symmetric 2D. When modelling in 2D, you can use a dense mesh, giving an excellent accuracy for a wide range of frequencies.

In the demonstrated work on conical antenna we are majorly considering 3 factors of antenna parameters they are: improvement in the impedance factor of the antenna, generating suitable radiation factor for the desired frequency, indicating the usage of conical antenna in various applications, verifying the high gain and high frequency operation for conical antenna. The designed antenna can be used as a transmitting antenna, at the same time; it also can be used as a receiving antenna because of its small size and the omnidirectional radiation. The size of the antenna is reduced enormously. It is convenient to take along and install, and it has well practical values.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT
ON
"MODELLING OF NOTCH FILTER USING WHISPERING GALLERY MODE RESONATOR"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
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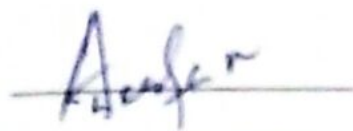
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ABSTRACT

The whispering-gallery mode of resonance with high-permittivity dielectric resonators appears to be mostly useful in the millimeter wave region, where more conventional dielectric resonators are impractically small. High order whispering gallery (WG) mode Dielectric Resonators (DR's) are attractive for filter applications, since they can generally have a small size, and high Q's at high frequency. The band stop filter, also known as notch filter, passes all frequencies with the exception of those within a specified stop band which are greatly attenuated.

The proposed work describes a novel bandpass filter based on using Whispering Gallery (WG) modes in high-density dielectric resonators. Because of the high modal purity, this type of resonator will be useful as a filter element in the millimeter wave range of frequencies. Coupling schemes conventionally used with WG mode DR's include loop and a waveguide. In this approach, when the length of the ring waveguide is an integer number of wavelengths, the ring waveguide resonates to the wavelength and the power stored in the ring builds up leading to evanescent waves. This makes the ring resonator an ideal notch filter, blocking the signal at the resonant wavelength. The proposed notch filter shows almost zero transmittance at resonance. The proposed method demonstrates a notch filter with a narrow center frequency using COMSOL Multiphysics tool.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"ULTRASOUND IMAGING BASED FETAL CARDIAC CHAMBER SEGMENTATION AND DETECTION OF ABNORMALITY"

Submitted in Partial Fulfillment of the Requirements for the Award of Degree

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ABSTRACT

A congenital heart defect is a problem with the structure of the heart. Congenital heart defects are the most common type of birth defect. The defects can found in the walls of the heart, arteries and veins of the heart. They can disrupt the normal flow of blood through the heart. The blood flow can slow down, go in the wrong direction or to the wrong place, be blocked completely. These heart defects can be identified by ultrasound scan.

An ultrasound scan, sometime called a sonogram, is a procedure that uses high frequency sound waves to create an image of part of the inside of the body. An ultrasound scan be used to monitor an unborn baby, diagnose a condition, or guide a surgeon during certain procedure. Ultrasound images are made from reflected sound, and a diagnosis can then be made.

The defects in the ultrasonic fetal cardiac images can be identified by subjecting them to a segmentation done by discrete wavelet transform which plays an important role. To overcome the problem of some unwanted noise in the ultrasonic images filter are required. For segmentation, the image is converted from RGB to gray scale images. To calculate the gestation period of the fetal, the ratio of area of left ventricle region and right ventricle region are taken. After the discrete wavelet transform, the congenital heart defects such as ventricular septal defect and atrial septal defect are identified.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"WATER LEAKAGE DETECTION AND MONITORING SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

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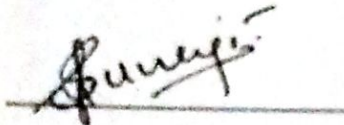|	
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ABSTRACT

Water is one of the most important natural resources essential for our survival and it is supplied to cities through pipelines from water sources such as rivers and lakes. Non-Revenue Water (NRW) is the amount of water which has been produced and lost before reaching the customer. It may be due to leaks, illegal connections & faulty meters. In Indian cities like Bangalore, the amount of NRW is large and this point to the deteriorating health and efficiency of pipeline network.

Bearing in mind, the water leakage is a global issue that has already grown to become a critical issue in many areas, the objectives of the project are to develop a leak detector system and water monitor system, which use the concept of Internet of Things to monitor the data received from the system and take necessary actions when leaks is detected. The need of water requirement and its distribution is monitored through web interface based on water flow sensor value, to ensure equal and adequate water distribution to each connection (end point). The proposed system will help to reduce the leakage of water in the pipeline system and even it help in monitoring the amount of water consumed by the user. The proposed system is the combination of leakage detection and monitoring system which help in improving the pipeline system. Through the proposed system the user will be aware about the amount of water consumed and it can help to determine if there is any leakage in the home pipeline system.

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PROJECT REPORT ON

"ESTIMATION OF DURABILITY OF RICE CROPS USING SENSORS"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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Pooja M	4AL15EC057
Poonam M Gunagi	4AL15EC060

Under the Guidance of
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Assistant Professor
Department of E&C Engineering

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

MOODBIDRI – 574 225.

2018-2019

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

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(Affiliated to VTU, BELAGAVI)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

Certified that the project work entitled "**ESTIMATION OF DURABILITY OF RICE CROPS USING SENSORS**" *is a bona fide work carried out by*
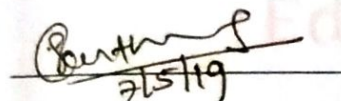
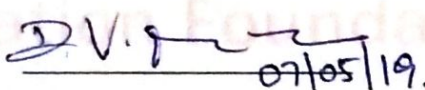|	
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in partial fulfillment for the award of **BACHELOR OF ENGINEERING** in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

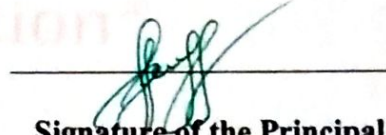|		
Signature of the Guide	**Signature of the H.O.D**	**Signature of the Principal**
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1. DR. D.V. MANJUNATHA   12.06.19

2. ASHOKA A

ABSTRACT

Rice is one of the leading food crop in the world. It is also the most important food crop for millions of small farmers who grow it on millions of hectares throughout the region. Post harvest loss is a worldwide problem. The rice after farming is packed in huge sacks and stored in warehouses for months. It becomes very difficult to deal with the quality of the rice crops. During storage, a number of physicochemical and physiological changes occur, which are collectively termed aging, including changes in pasting properties, colour, flavour and composition, which all affect rice quality. Due to the prolonged storage, humidity causes worms to develop which reduces the quality.

Currently there is need for a system which is real time and which should automatically read the data, monitor it and actuates the environmental conditions inside the storage room according to it. Hence the main objective of the proposed model is to control the environmental changes inside the storage room to retain its quality. Durable Humidity and Temperature sensor (DHT11) is used to sense the humidity and temperature value, peltier device is used to automatically control the heating and cooling effect in the warehouse and thus actuates it to favorable conditions. Global System for Mobile (GSM) communication module is used for regularly updating the farmer about the warehouse conditions. The temperature and humidity values are also being updated to the server using the WiFi module. This helps the farmers in trading purpose.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 018

PROJECT REPORT ON

"Pixel Based Classification of Multispectral Remote Sensed Data using Decision Tree Classifier"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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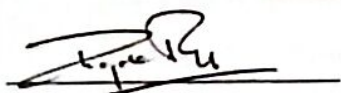### (Affiliated to VTU, BELAGAVI)

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Certified that the project work entitled "**Pixel Based Classification of Multispectral Remote Sensed Data using Decision Tree Classifier**" *is a bona fide work carried out by*

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1. Dr. D.V. MANJUNATHA

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ABSTRACT

Remote sensing is the science and art of obtaining information about an object through the analysis of data acquired by a device that is not in contact with the object. Remotely sensed data can be of many forms, including variations in force distribution, acoustic wave distribution or electromagnetic energy distributions and can be obtained from a variety of platforms, including satellite, airplanes, remotely pilot vehicles, handheld radiometers or even bucket trucks. They may be gathered by different devices, including sensors, film camera, digital cameras, and video recorders. Our eyes acquire data on variations in electromagnetic radiations. Instruments capable of measuring electromagnetic radiation are called sensors. Sensors can be differentiated in two main groups: Passive sensors: without their own source of radiation. They are sensitive only to radiation from a natural origin. Active sensors: which have a built in source of radiation. Examples are Radar and Lidar systems.

In this project, an attempt has been made to develop a decision tree classification algorithm for remotely sensed satellite data using the separability matrix of the spectral distributions of probable classes in respective bands. The spectral distance between any two classes is calculated from the difference between the minimum spectral value of a class and maximum spectral value of its preceding class for a particular band. The decision tree is then constructed by recursively partitioning the spectral distribution in a Top-Down manner. Using the separability matrix, a threshold and a band will be chosen in order to partition the training set in an optimal manner. The classified image is compared with the image classified by using classical method Maximum Likelihood Classifier (MLC).

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"AGRICULTURAL DROUGHT AND CROP FAILURES DATA ACQUISITION AND TRANSMISSION SYSTEM BASED ON IoT"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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CERTIFICATE

Certified that the project work entitled "AGRICULTURAL DROUGHT AND CROP FAILURES DATA ACQUISITION AND TRANSMISSION SYSTEM BASED ON IoT" as a bona fide work carried out by
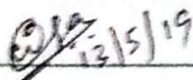
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in partial fulfillment for the award of BACHELOR OF ENGINEERING in ELECTRONICS & COMMUNICATION ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

_13/5/19_	_13.05.19_	
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2. ASHOKA-A	_11/45_

ABSTRACT

Agriculture, the backbone of Indian economy, contributes to the overall economic growth of the country and determines the standard of life for more than 50% of the Indian population. Crop failure is simply be defined as a situation whereby all crops on a farm are lost. For the situation to be considered a crop failure, it has to be severe enough to adversely affect the farmers, consumers, and the economy. The result of crop failure tends to affect farmers' income, decrease the amount of food available for consumption, and also negatively affect the economy of a country, especially if it is an agriculture dependent economy. The failure of crop is one of main problem to agricultural field which is usually situated due to no proper water supply and adverse weather condition were two major reasons for crop failure.

Unpredicted rain fall is the one of the unsolved problems in the field of agriculture and to the farmers. Proposed system will consider the weather forecast details of the crop field region to make decision of water supply to the crop field with respective to reference value of particular crop in the field and system will maintain a record and transmit the water level data of crop field to the farmer by displaying on webpage were farmer can analyze the previous crop data which will be stored in cloud.

Automation or automatic control is the use of various control systems for operating equipment's with minimal or reduced human intervention. This project is solely based on using technology and automation. Smart farming based on IoT technologies will enable growers and farmers to reduce waste and enhance productivity. The farmers can monitor the field conditions from anywhere. IoT-based smart farming is highly efficient when compared with the conventional approach.