

DIGITAL STETHOSCOPE

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UNDER THE GUIDANCE OF

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Abstract

This report presents the design, implementation, and testing of a **DIGITAL STETHOSCOPE**. The system uses a custom built sensor to capture heart sounds and converts them to electrical signal. This signal is amplified by the amplifier and then sent through the low pass filter to attenuate high frequency signal. This high frequency signal occurs because of cardiac murmurs and other body sounds.

This signal is then sampled by the analog to digital converter. These samples are then sent to USART data register and PWM data register. USART is used to send signal information to pc to show the waveform on the Matlab at 9600 baud rate. While PWM is used to hear the heart sound. This is done by sending the PWM signal through RC circuit which acts as DAC. All these operations are done by Atmega32 MCU using the interrupts. Keypad and LCD are used to change the modes of the stethoscope.

STOCK MARKET PREDICTION MODEL USING SOFT COMPUTING TECHNIQUES

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ABSTRACT

Post-liberalization activities have generated substantial interest amongst common masses to invest in securities and stock markets. Stock markets are a great means to generate wealth provided the investor has in-depth knowledge about its complex and unstable nature. The investor should be well aware of the factors that directly or indirectly affect the stock prices. For a beginner or an amateur willing to invest his money in securities, this may not be the case. This calls for an affordable technology supported application which can help such investors in making trading decisions.

Use of Fuzzy Logic and Artificial Intelligence Techniques to predict the stock market movement can be very effective in such cases. Fuzzy logic has innate ability to model human understanding very efficiently in terms of linguistic variables. As opposed to strict boundaries in case of crisp sets - for example in binary logic where a given statement can either be completely true or completely false, fuzzy logic allows partial membership of a given input to multiple sets.

There are many financial indicators in stock market like Moving Average Convergence and Divergence (MACD), Consumer Confidence Index, Jobless Claims, Relative Strength Index (RSI) etc. which may indicate different phenomena, for example- suppose that one of the indicators rises, which means that the market is bullish and the stocks of a certain company, if bought, can be profitable for the investor. But on the other hand, another indicator does not indicate the market as bullish as the previous one does. In such a situation, the decision of whether to buy stocks or sell them becomes a matter of confusion since there is no definite yes or no answer obtained from the analysis. Thus, fuzzy reasoning can be used in such cases

where several factors act as different forces to push the decision of investment in different directions.

This project demonstrates a Stock Market Prediction Model using soft computing techniques of Fuzzy Logic. Extensive study on technical analysis of stock market was done prior to engineering the prediction model. Economic indicators were fuzzified and processed by fuzzy inference system, to give an output signal indicating whether to buy or sell certain stocks.

Image Watermarking using DWT

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Abstract

Digital data can easily be used in an illegal way. It can be copied, modified and distributed again. Copy right protection, intellectual and material right protection for authors, owners, buyers and distributors and the authenticity of content are crucial factors in solving an urgent and real problem. In such a scenario digital watermarking techniques is a valid solution. Watermarking is a technique of embedding hidden and unnoticeable signal into an image in the form of text or image so that even if unauthorized person tries to access and use it illegally, he could be caught on the basis of Copyright Protection and Ownership Identification.

The project proposes Invisible Image Watermarking using DWT. Invisible Watermarking hides watermark from the intruder. Quality loss is the major issue in Watermarking. Embedding watermark inside the image can degrade the quality of watermarked image. Results are taken by calculation of PSNR values of Watermarked images after applying various attacks on Watermarked image to check the efficiency of Watermarking.

FINGERPRINT BASED SECURED ACCESS SYSTEM

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Abstract:

Human identification is field very significant and which has undergone rapid changes with time. An important and very reliable human identification method is fingerprint identification. Fingerprint of every person is unique. So this helps in identifying a person or in improving security of a system.

Fingerprint of a person is “read” by a special type of sensor. Finger print sensor can be interfaced with a microcontroller. In this system we can add new user and delete the existing user, also identify the user using fingerprint. It plays a very important role in forensic and civilian applications such as criminal identification, access control, and ATM card verification. A R305 module as a fingerprint scanner has been selected for fingerprint collection and access control deployment. The scanned images will be compared with the stored images. If the result is success then microcontroller ATmega16 will drive the motor and door interfaced with controller will open for given amount of delay.

ELECTRONIC FRAGRANCE GENERATOR (A USER INTERFACE APPLICATION THAT EMITS FRAGRANCE CORRESPONDING TO A PICTURE)

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Abstract

An electromechanical device that generates fragrance along with the picture is designed. This technology adds a new dimension to web pages and any other form of electronic media and communication. A peripheral device about the size of 15x15cm is interfaced to the PC via a USB serial Port. It uses consumable cartridges that need to be refilled similar to ink jet cartridges used in ink Jet printers. The fragrance is emitted in the user's personal space. The fragrance is either on demand (i.e. with a click or keyboard etc) or through a programmed response. The areas benefitted include Entertainment industry, Media and Marketing Industry, Educational and Medical Purposes.

HARWARE IMPLEMENTATION OF OFDM TRANCEIVER ON FPGA

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Abstract

Orthogonal Frequency Division Multiplexing is the most commonly used multicarrier modulation scheme in wireless communication due to its robustness in frequency-selective channels. This project involves hardware design and synthesis of an Orthogonal Frequency Division Multiplexing (OFDM) Transceiver used in IEEE 802.11 a standard. The initial simulation of an OFDM transceiver is described using MATLAB. It provide an understanding of the various components of an OFDM system and measure the theoretical performance of the system.

The second phase of project involves designing the components of the modern OFDM system using VHDL. The design will be simulated to determine the overall logical utilization of the system. This design further serves to drive the FPGA implementation on Xilinx Spartan board. The main emphasis is on efficient implementation of various OFDM blocks like 64 Point FFT which require lot of resources for computation. The goal set forth is the development of a base software/hardware digital communication system, which can be further extended for developing various applications.

CAR AUTOMATION AND CAN PROTOCOL IMPLEMENTATION USING FPGA

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Abstract

In this project, we have aimed to design various electronic modules that can be fitted into a car that will help to automate a car so that the driver gets comfort, and he can drive with ease since all other tasks will be controlled by the ECUs installed in the car.

There will be various ECUs that will perform individual tasks like wiper control, headlight control, speed control, accident avoidance, anti-theft alarm, etc

To carry out these operations, we have aimed to use FPGA as CAN controller.

FPGA is used instead of microcontrollers, so that parallel processing can be carried out instead of sequential processing. This will save a lot of time that is required to carry out the operations, hence, efficiency is greatly increased, and many tasks can be carried out simultaneously.

The CAN protocol is used to control various electronic devices that can exchange information with each other over a common serial bus. CAN bus transmits one signal at a time, hence, priority has to be set to each signal. This in turn reduced the wiring connections to a great extent thereby reducing the bulkiness and complexity of the system.

FPGA is designed as CAN controller to reduce the hardware complexity. FPGA pins can be used as CAN bus and hence, all ECUs can be connected to FPGA directly to avoid bulkiness and wiring complexities. Since there will be no external controller ICs, the efficiency and speed in carrying out operations will increase dramatically and will be beneficial for the driver to control the car.

It can be hence realised that if such project comes into existence, will provide ease to the driver, as well as manufacturer, since due to only one compact FPGA kit, the electronic modules can be easily fitted into the car and will reduce the complexity of operations, as well as improve the efficiency by fast processing.

Thus, such system will provide advantages like greater safety, more comfort, convenience, ease of driving to the driver as well as the people sitting in the car.

Raspberry Pi based IP Security surveillance and Real time Traffic management.

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Abstract

Raspberry Pi based IP security surveillance and real time traffic management provides a solution to city traffic problem. Currently existing traffic signals uses conventional methods to decide the ON-OFF period of traffic signals. These methods are based on gathering statistical data from survey and other sources. But the main pitfall of these methods is, it doesn't use any real time data to analyze the current traffic on road, which is important in terms of managing traffic on road. So we can say that these signals are passive devices once installed. And because of that during rush hours in a day we observe high traffic jams on road.

The aim of this project is to make traffic signals intelligent. A traffic signal itself decides it's ON-OFF period based on current traffic density. This will help in reducing traffic jams. We used Raspberry Pi and Image processing technology to provide solution to this problem. Raspberry pi is a mini credit card size computer board. It has its own Linux based operating system called 'Raspbian' and also has on chip peripherals. Image processing is used to analyze real time traffic on the roads. For which background subtraction technique is used This information is then used by R-pi to decide the ON-OFF period of signal.

An Internet protocol camera, or IP camera, is a type of digital video camera commonly employed for surveillance and which can send and receive data via a computer network and the Internet. The same cameras which are used for image processing are used for video surveillance making it more practical and efficient.

Wireless Home Automation Using Voice Recognition

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Abstract

Project is speech recognized automation system using voice recognition through wireless communication. This project gives the design of automation system using wireless communication and speaker recognition using Matlab code. Straightforward programming interface of Matlab makes it an ideal tool for speech analysis in project. This automation system is useful for home appliances as well as in industry.

The speech recognition is done through Matlab by matching commands stored in data base of Matlab with incoming voice command of speaker. It uses low-power BLUETOOTH transceiver wireless communication modules which are relatively cheap. This automation system is intended to control lights, fans and other electrical appliances in a home or office using relays. Further, if security is not big issue then Speech processor is used to control the appliances without speaker identification.

Automatic Attendance Marking System Using Face Recognition

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Abstract

Students' attendance in the classroom is very important task and if taken manually wastes a lot of time. There are many methods available for this purpose e.g. biometric attendance. All these methods also waste time because students have to make a queue to scan their finger on the scanning device. Sometimes one has to repeatedly attempt for the correct thumbprint because of wrongly placed thumb on the scanner.

Our work proposes the idea of using Face Recognition System for Automatic Attendance Marking in the classroom. This project describes an efficient system that automatically marks the attendance without human intervention. This system consists of a camera that captures the image of students, and will be placed in front of the classroom. The faces in the captured image will be detected using Viola-Jones algorithm and recognized using Principle Component Analysis.

A database consisting of the images of the all the students in the class will be stored. Then, a still image with the help of camera interfaced with the laptop will be captured. The detected faces observed will hence be compared with the database stored and the attendance will be marked accordingly in the attendance server.

Abstract Implementation of Convolutional Encoder and Viterbi Decoder

On FPGA

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Abstract

In most wireless communications systems, convolutional coding is the preferred method of error-correction technique to overcome transmission distortions. This abstract outlines the theory of convolutional encoder, Viterbi decoder and its implementation on FPGA. The design is implemented using verilog coding on SPARTAN 3E (XC3S500E) with constraint length as 3 and rate as $1/2$. The use of multibooting technique ensures the efficient use of hardware wherein both encoder and decoder are implemented on same kit and can be configured using a switch. The proposed decoder is suitable for use in receiver architectures of the 802.11a wireless local area network and 3G cellular code division multiple access environment. Present wireless standards such as the third generation (3G) systems and the 802.11a WLAN utilize some formulation of convolutional coding; which is usually decoded via Viterbi decoders. There is a growing interest in building devices or systems that can operate on multiple standards and gain benefit through reuse of hardware. This becomes especially important in the context of multi-tier networks which aims to support different kinds of network on a single device and provide the capability of seamlessly switching across networks. This motivates the need for Viterbi decoder which has the capability to correct errors effectively.

“Discrete Cosine Transform implementation using CORDIC algorithm”

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CORDIC is an acronym for Co-ordinate Rotation Digital Computer. It is a class of shift-add algorithms for rotating vectors in a plane, which is usually used for the calculation of trigonometric functions, multiplication, division and conversion between binary and mixed radix number systems of DSP applications. The advent of reconfigurable logic computers in DSP applications permits the higher speeds of dedicated hardware solutions at costs that are competitive with the traditional software approach.

CORDIC hardware-efficient algorithms are a class of iterative solutions for trigonometric and other transcendental functions that use only shifts and adds to perform. The trigonometric functions are based on vector rotations, while other functions such as square root are implemented using an incremental expression of the desired function.

Our approach is to design CORDIC algorithm to find out DCT i.e. Discrete Cosine Transform in efficient way by considering complexity in time and memory. The CORDIC offers the opportunity to calculate all the desired functions in a rather simple and elegant way. Due to the simplicity of the involved operations the CORDIC algorithm is very well suited for VLSI implementation. The rotated vector is also scaled making a scale factor correction necessary.

In this thesis, the CORDIC algorithm has been implemented in XILINX Spartan 3E FPGA kit using VHDL and is found to be accurate. It contains the implementation of Discrete Cosine Transform using CORDIC algorithm in Xilinx.

GPS BASED SOLDIER TRACKING AND HEALTH INDICATION SYSTEM

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Abstract

In today's world enemy warfare is an important factor in any nation's security. The national security mainly depends on army (ground), navy (sea), air-force (air).

The important and vital role is played by the army soldier's. There are many concerns regarding the safety of these soldiers. As soon as any soldier enters the enemy lines it is very vital for the army base station to know the location as well as the health status of all it's soldiers.

In our project we have come up with an idea of tracking the soldier as well as to give the health status of the soldier during the war, which enables the army personnel to plan the war strategies. Also the soldier can ask for directions to the army base unit in case he feels that he is lost. By using the location sent by the GPS the base station can guide the soldier to safe area. Our project aim is to provide GPS and GSM based tracking for the soldier.

We are using GPS for getting exact location and GSM is for providing instructions to the soldier for further task given to him. On LCD screen he will get those instructions. Thus, This project will be very helpful to our army.

GPS Safety Device

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Abstract

GPS safety device is a tracking unit that uses the GPS(Global Positioning System)technique to determine the precise location of an object, person or other asset to which it is attached and using GSM (Global System for Mobile communication) modem this information can be transmitted to remote user whose number is previously stored.The GPS based safety device alerts nearest police stations and also the user's family members about the GPS coordinates of the device when switch is enabled. Google maps and other Android applications can be helpful in finding the exact location.

This device contains embedded system comprising of GPS receiver with 1575.42 MHz frequency and transmitter GR-87 &GSM SIM 300 module along with ARM microcontroller. When the switch is enabled, microcontroller receives an interrupt. Now the controller fetches the GPS coordinates from receiver and under its control this data is serially transmitted to GSM. During object motion, its location will be reported continuously to previously stored numbers by SMS till the switch is ON. The purpose of this system is to design and integrate a new system which is integrated with GPS- GSM to provide following feature: a) simple switch enabled device b)Location information, c) Real time tracking using SMS, d) Instantaneous and continuouscommunication for quick running reports e) emergency help. Future scope can be seen in video recording capabilities, to record a video of the incidence for further probing.

Cost-Effective GUI Based OMR Reader for OMR Sheet Images

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Abstract

Optical Mark Recognition (OMR) is an automated process of capturing and analyzing information, usually in the form of shaded bubbles. This technology is useful for applications in which large numbers of hand-filled forms need to be processed quickly and with great accuracy, such as surveys, reply cards, questionnaires and ballots.

Existing OMR machine requires specially designed OMR Sheets having high quality paper and is also non-portable.

The aim of this paper is to propose a cost-effective software solution named as Graphical User Interface (GUI) Based OMR Reader for OMR sheet images, having many new features in it, to eliminate the need of these huge OMR machine readers, which are very expensive.

This software solution takes OMR sheet images to be evaluated as input from either a mobile phone or a dedicated camera or from a scanner, then extracts these images and also extracts marked registration number and shaded answers and finally calculates marks, which are then displayed in the Exam Result Sheet generated by the software.

This proposed software solution is a Windows Forms Application on .NET Framework 4.5 and uses Image Processing with the help of AForge.NET library including AForge.Imaging and AForge.Math sub-libraries.

ADVANCED HOME AUTOMATION SYSTEM

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Abstract

Home automation involves introducing a degree of computerized or automatic control to certain electrical and electronic systems in a building. These include lighting, temperature control, security systems, etc.

A hardware system is installed to monitor and control the various appliances. The system would control the appliances based on its configuration. For example, it could measure the ambient light using a hardware sensor and turn on the lights when it grows dark. It can also allow a person to control appliances from a remote location. For example, one could turn on the air conditioning from the central control room.

This microcontroller based project demonstrates a home automation system that also includes the security and communication facilities. The system has the wired communication facility with the central office in the building. The system contains the password based security system for having the access to the room. LCD is provided for displaying information to user and keypad is provided for entering information. Using sensors the system detects the number of individuals going inside or outside so as to detect the intruders and automatically turn on the light and fans, and then automatically turn them off when the user leaves the room. By detecting the surrounding temperature system can start fan/AC for high temperature and can start the heat pump for low temperature. Also by detecting the light intensity the lights are switched on if the intensity is below some defined value. The system allows the user to control each of the lights and fans individually also. All the devices can also be controlled by the central room. Because of efficient use of electric equipments the power is saved. For any kind of security violation the central office can be alerted with the buzzer. There is facility to exchange the messages with the central office.

UNDERGROUND CABLE FAULT DISTANCE LOCATOR

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Abstract

The objective of this project is to determine the distance of underground cable fault from base station in kilometers. The underground cable system is a common practice followed in many urban areas. While a fault occurs for some reason, at that time the repairing process related to that particular cable is difficult due to not knowing the exact location of the cable fault. The proposed system is to find the exact location of the fault.

The project uses the standard concept of Ohms law i.e., when a low DC voltage is applied at the feeder end through a series resistor (Cable lines), then current would vary depending upon the location of fault in the cable. In case there is a short circuit (Line to Ground), the voltage across series resistors changes accordingly, which is then fed to an ADC to develop precise digital data which the programmed microcontroller of 8051 family would display in kilometers.

EMBEDDED WEB SERVER

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Name of the Guide :Prof.A.B.Patki

Abstract

The main aim of EMBEDDED WEB SERVER project development is to implement the compact Ethernet based home automation system. This high performance unit is possible by interfacing a Ethernet controller to the high speed AVR controller. In order to implement this we have to select one Ethernet controller which is SPI based and is easy to interface with microcontroller.

This application uses ENC28J60 as ethernet controller for serial interface. ENC28J60 can support either full duplex mode or half duplex mode. It will take transmitting/receiving 8Kbytes. ENC28J60 has internal DMA for fast access data.

The module allows a user to interface a home appliance through the internet. The project is designed for a generic home appliance so the only user option is to turn it on/off. By selecting the data from web page, we can send the packet of information to the LAN. Microcontroller collects this packet, processes it and outputs the data. The data goes into a circuit which turns the appliance off or on.

“MOBICARE-HEARTRATE MONITOR SYSTEM”

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ABSTRACT

The aim of this project is to implement an ECG and Digital Heart Rate counter. The main challenges include amplifying the desired weak signal in the presence of noise from other muscles and electrical sources. A display of the heart rate will be obtained by measuring the time between signal peaks and then calculating the frequency of peaks in units of beats per minute.

In general, The heart rate monitor consists of bio-potential electrodes that are placed on the patient. Body fluids conduct electrical signals from the surface of the heart to the electrodes. Measurements are taken as the difference between two electrodes, while a third electrode is used as a reference. But in this project we have designed a heartrate monitoring system by just using Fingertip. The ECG amplifier circuit then amplifies the signal and sends the information to a PC (via a data acquisition circuit). The information is then analyzed and processed by a ‘Processing’ program. The user-friendly interface allows for the cardiologist to analyze the patient’s electrocardiogram. The ‘Processing’ program goes beyond that of a regular ECG in that it provides information such as time interval between two heart beats, BPM (beats per minute). We have displayed the ECG signals on the monitor (laptop) by using the principle of PPG signals coming from the sensor.

. This is a remote monitoring system and mobile in nature. Our implementation of the heart monitor involves low cost amplifier and filter components coupled with a sophisticated microcontroller and LCD screen on laptop. Results were successful for the amplifier filter stage of the implementation with an ECG successfully detected and recorded but variability of the voltage points complicated the calculation and display of the actual rate.

STEREO VISION BASED OBJECT SEGMENTATION AND DIMENSIONING

Name of Project Guide: Dr. M.A.Joshi

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SKANDH PATHAK

ABSTRACT

The proposed system presents a method to accurately calculate the dimensions of any object by capturing a pair of stereo images of that object. Stereo images are images of an object that are captured from two different locations of the camera usually along the X-direction keeping the vertical displacement of the camera almost constant. The underlying concept that is used to calculate the dimensions is Depth by Disparity. In this technique, the relative shift in pixels in the two stereo images is calculated and then based on this disparity value the depth map of the images is generated. The intrinsic camera matrix of the phone camera can be obtained after a preliminary calibration of the camera lens by using a standard chessboard pattern. Using the information of depth map and this camera matrix, the dimensions of the objects in the images can be calculated by re-projecting the scene into 3D and finding out the real world coordinates of the objects. It is a fully automated system that makes use of both embedded and android platforms for dichotomous purposes. A mobile phone running android 4.0 or higher is used to capture the images and do the processing while an atmega16 is used to trigger the phone camera by sending signals from the audio jack of the phone. The system is handheld and hence portable. The accuracy of the system is, to a large extent, independent of the colour and texture of the object. The said system can be used for calculating the dimensions of courier parcels, packets, luggage, etc. Its use can be further extended to modelling the 3-D model of a scene which is useful in the development of interactive games. Additionally, the system can also be used in architecture to model the structures of buildings, rooms, etc. civil industry to calculate the dimensions of blocks of cements and pillars, mechanical industry to calculate automobile parts' dimensions, etc.

STEREO VISION BASED OBJECT SEGMENTATION AND DIMENSIONING

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ABSTRACT

The proposed system presents a method to accurately calculate the dimensions of any object by capturing a pair of stereo images of that object. Stereo images are images of an object that are captured from two different locations of the camera usually along the X-direction keeping the vertical displacement of the camera almost constant. The underlying concept that is used to calculate the dimensions is Depth by Disparity. In this technique, the relative shift in pixels in the two stereo images is calculated and then based on this disparity value the depth map of the images is generated. The intrinsic camera matrix of the phone camera can be obtained after a preliminary calibration of the camera lens by using a standard chessboard pattern. Using the information of depth map and this camera matrix, the dimensions of the objects in the images can be calculated by re-projecting the scene into 3D and finding out the real world coordinates of the objects. It is a fully automated system that makes use of both embedded and android platforms for dichotomous purposes. A mobile phone running android 4.0 or higher is used to capture the images and do the processing while an atmega16 is used to trigger the phone camera by sending signals from the audio jack of the phone. The system is handheld and hence portable. The accuracy of the system is, to a large extent, independent of the colour and texture of the object. The said system can be used for calculating the dimensions of courier parcels, packets, luggage, etc. Its use can be further extended to modelling the 3-D model of a scene which is useful in the development of interactive games. Additionally, the system can also be used in architecture to model the structures of buildings, rooms, etc. civil industry to calculate the dimensions of blocks of cements and pillars, mechanical industry to calculate automobile parts' dimensions, etc.

VEHICLE TRACKING AND ACCIDENT WARNING

SYSTEM USING GPS AND ITS IMPLEMENTATION

IN FPGA

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ABSTRACT

This project is mainly used to track the position of the Vehicle by the owner or can also be used in the public transportation system by the people to know the location of the buses or trains. In case of any accident, the system sends automated messages to the pre-programmed numbers. We can send messages to any number of mobiles. The owner of the vehicle, Police to clear the traffic, Ambulance to save the people can be informed by this device. This uses a GPS (Global Positioning System) to know the exact position of the vehicle with an accuracy of a few feet. GSM is used to receive SMS from the user and reply the position of the vehicle through a SMS. A FPGA is used to control and co-ordinate all the parts used in this system. When there is any accident, an accelerometer sensor is triggered and it sends signal to the FPGA. The FPGA circuit processes the input and sends the appropriate output according to the programming done.

This can also be used for other purposes such as asset tracking, Stolen Vehicle recovery, Fleet Management, Field Service Management, Field Sales etc.

IMPLEMENTATIO

N OF RS CODEC ON FPGA

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Abstract

In digital communication, Reed-Solomon (RS) codes refer to as a part of channel coding that had becoming very significant to better withstand the effects of various channel impairments such as noise, interference and fading. These are cyclic codes and are very effectively used for the detection and correction of burst errors. Galois field arithmetic is used for encoding and decoding of Reed – Solomon codes. At the decoder, the syndrome of the received codeword is calculated using the generator polynomial to detect errors. Then to correct these errors, an error locator polynomial is calculated. From the error locator polynomial, the location of the error and its magnitude is obtained. Consequently a correct codeword is obtained.

FPGA implementation creates a flexible, fast method and high degree of parallelism for implementing the Reed – Solomon codes. The purpose of this project is to evaluate the performance of RS coding system in noisy channel and implementation of RS codec in VHDL. XILINX IDE is used to create and run extensively the simulation model for performance evaluation.

Digital Image Watermarking Techniques and Two level secure Steganography using biometric

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Abstract

Digital Watermarking is an application associated with copyright protection. we have used three Watermarking techniques:

1. LSB Method: Watermark image is encoded in the cover image by changing the least significant bit of the pixel value and encodes the cover image. However this method is not robust to additive noise.
2. DWT SVD Method: In this method , Singular values(SV's) of high frequency (HH) band are used to optimize perceptual transparency and robustness constraints. This method is immune to different Attacks.
3. DCT Method: In this method, watermark converted to binary image and then this binary information is added to DCT coefficients of original image.

Steganography is the science and art of concealing writing or messages. First hide message in image and then **Thumb impression** of user taken as a key. At decoder if **Thumb impression** matches then only output message is given. Two methods are used.

1. LSB Method
2. DCT Method

SPEAKING HANDS: Boon For Differently Abled

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Abstract

Mute people generally undergo Speech Therapy where they are taught the use of Sign Language. However, other people cannot understand the gestures and have to resort to written notes or ambiguous gestures. People suffering from cerebrovascular accident (stroke) due to an aneurysm or a clot, sometimes lose their ability to speak. They may also have minimum functionality of their limbs and extremities. The proposed device aims at bridging this gap in communication.

The concept of Text to Speech (TTS) has been modified to accommodate a sign language gesture as an input and the output is an audio signal. The sensors in the device take the input in the form of a gesture that the user has made which is then passed on to a microcontroller. The microcontroller processes the information and then triggers a file corresponding to the particular gesture stored in the SD card which is then decoded by the integrated mp3 player. Thus, the gesture is converted into a speech signal which can be heard over headphones or speaker. The device can also be used as a teaching aid to learn the Sign Language for new trainees.

The device has been successfully tested with two different types of sensors and satisfactorily obtained results are reported in this document.

AUTOMATED ENERGY CONSUMPTION REDUCTION AND POWER SAVING USING ZIGBEE COMMUNICATION

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ABSTRACT

This project proposes remote-controllable and energy-saving room architecture to reduce power consumption. To realize the proposed room architecture, we proposed and designed the automatic power cut-off outlet and a ZigBee communication. In this project we proposed mechanism RF communication protocol between host and agents for sensing information and standby power control command transmission. Agent acquires the local information such as lighting, power consumption using the ZigBee module and sends this sensing value to the host then, host compares this sensed value with defined control algorithm and sends the standby power control command to the agent.

The proposed power outlet monitors the power consumption for the predetermined time and completely cuts off the power supply when the monitored power is below the threshold. This power outlet has a function of changing the threshold power, which enables any kinds of home appliances to be applied to the power outlet. The standard is aiming to be a low-cost, low-power solution for systems consisting of unsupervised groups of devices in houses, factories and offices. Expected applications of this project are building automation, security systems, remote control, remote meter reading and computer peripherals.

REAL TIME VEHICLE TRACKING INFORMATION SYSTEM

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ABSTRACT

Vehicle tracking has always been viewed as an integral part of sci-fi movies but now with the development of open source platforms such as Google Maps API, node.js server and number of available resources on single board Linux computers, we aspire to bring it to real life through this project.

This project aims to highlight some of the applications of GPS tracking such as setting predefined routes for women and child safety, obtaining approximate speed and location of a public transport bus to calculate the time it will take to reach your stop, tracking vehicles of suspected convicts.

As a first step in realising these applications, GPS modules shall be present in every vehicle and movement will be tracked wirelessly. The GPS coordinates will be extracted from the data received from the GPS module by a code implemented in the Raspberry Pi (both shall be mounted in the vehicle) and this data will be sent over the internet to a remotely located central server where it will be stored in a database. The real time data can be downloaded or viewed from any computer using a browser. The Pi shall then be interfaced with either sensors or a camera module depending on the application requirements. This may further be developed as an android application for providing a better user interface.

Real Time Vehicle Position Logger using Raspberry Pi

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ABSTRACT

Our project is centered around the capabilities of the Raspberry Pi. The Raspberry Pi is a credit-card sized single-board computer that has immense computing capabilities which can be programmed for various different applications. One such application which we thought of is to use Raspberry Pi in the real time vehicle tracking system.

In this vehicle tracking system, a GPS module which is interfaced with a Raspberry Pi will be placed in a vehicle. The GPS receiver receives the data from the GPS satellites and determines the position information in the form of GPS coordinates. The job of the Raspberry Pi will be to extract these GPS coordinates, parse this data appropriately and send it over a socket to the server. The real time data i.e. the position and route of the vehicle can be viewed using a browser.

This system has many commercial as well as personal uses such as asset tracking, stolen vehicle recovery, child safety, obtaining approximate speed and location of a public transport bus to calculate the time it will take to reach your stop, etc. To further increase the scope of this project we plan to interface sensors as well as camera modules with the Raspberry Pi in order to include applications such as speed limit alerts and sleep detection. On combining GPS tracking with temperature, pressure, humidity and other such sensors the system can be implemented in vehicles to monitor the safe and secure transport of dairy products, chemicals, etc.