TECHERA2021

Everybody should learn to program a computer, because it teaches you how to think

- Steve Jobs

Madanapalle Institute of Technology & Science
(UGC- Autonomous)

Department of Computer Science & Engineering

MESSAGE FROM THE CORRESPONDENT

I feel exhilarated that the Department of Computer Science &Engineering of MITS is bringing out a magazine called TECHERA from the year 2015. This Magazine brings out the intellectual brilliance in various new techniques introduced in Information Technology industry.

``HARD WORK, SINCERITY, DEDICATION AND ENTHUSIASTIC DEVOTION TO WORK WILL FETCH YOU UNBOUND SUCCESS, MAY THE LORD SHOWER HIS BLESSINGS ON YOU``

I heartily congratulate the students and the staffs of CSE Department and Wish them a grand success.

Dr. N. VijayaBhaskarChoudary
Correspondent

MESSAGE FROM THE CHAIRMAN

Your blessings be bestowed upon us leading into the right path in organizing Magazine "TECHERA"by the Department of Computer Science& Engineering students and faculty of **MITS** and thereby make this magazine a grandsuccess.

Chairman

Sri. N. Krishna Kumar

MESSAGE FROM THE PRINCIPAL

I feel delighted about the magazine “TECHERA” to be hosted by the Department of Computer Science& Engineering of MITS. On this magnanimous occasion, I congratulate all the students and faculty members of department for their great efforts and coordination in bringing out the magazine a great success.

Principal

Dr. C. Yuvaraj

MESSAGE FROM THE HEAD OF THE DEPARTMENT

TECHERA is dedicated for addressing the emerging topics and challenges in the area of technology. **TECHERA** is to create great awareness on new innovative ideas and technologies. I wish the readers of **"TECHERA"** for their support and also can provide the useful feedback to improve the standards of magazine.

Dr. R. Kalpana
Head of the Department (CSE)

EDITORIAL DESK

The annual release of the department magazine **"TECHERA – 2021",** mark the spirit of exploration among students in an environment of erudition.

This year's edition of "**TECHERA - 2021**" focuses on current trends in Computer Science and Information Technology which are the major rays of hope for developing a new world of science. It is a collection of information and facts, featuring the recent developments of fascinating and conceptualcommunication.

The editorial team owes its gratitude to all who have made "**TECHARA - 2021",** a scintillating event.

Editors
Dr. R. Kalpana,
Dr Mahaboob Basha S,
Dr. Saravanan. K

ABOUT MITS

Madanapalle Institute of Technology & Science is established in 1998 in the picturesque and pleasant environs of Madanapalle and is ideally located on a sprawling 26.17 acre campus on Madanapalle - Anantapur Highway (NH-205) near Angallu, about 10km away from Madanapalle.

MITS, originated under the auspices of Ratakonda Ranga Reddy Educational Academy under the proactive leadership of and **Dr. N. VijayaBhaskar Choudary, Secretary & Correspondent** and **Sri. N. Krishna Kumar, Chairman** of theAcademy.

MITS is governed by a progressive management that never rests on laurels and has been striving conscientiously to develop it as one of the best centers of Academic Excellence in India. The Institution's profile is firmly based on strategies and action plans that match changing demands of the nation and the student's fraternity. MITS enjoys constant support and patronage of NRI's with distinguished academic traditions and vast experience in Engineering &Technology.

ABOUT DEPARTMENT

The Department of Computer Science & Engineering offers 4-year degree, which is established in the year 1998. The course is flexible and has been structuredtomeettheevolvingneedsoftheITindustry.TheDepartmentis offering M. Tech Computer Science & Engineering from the academic year 2007-2008.TheDepartmenthasobtainedUGC-AutonomousStatusinthe year 2014 and is running the Programmes successfully meeting all the requirements. The College Academic Council, Board of Studies of the department strive to provide quality education and most advanced curriculum and syllabus to make the students industry ready and excel in the contemporary businessworld.

The B.Tech. Programme under Department of Computer Science & Engineering was Accredited by the National Board of Accreditation (NBA)of All India Council for Technical Education(AICTE)

VISION

To excel in technical education and research in area of Computer Science & Engineering and to provide expert, proficient and knowledgeable individuals with high enthusiasm to meet the Societal challenges

MISSION

M1: To provide an open environment to the students and faculty that promotes professional and personal growth.

M2: To impart strong theoretical and practical background across the computer science discipline with an emphasis on software development and research.

M3: To inculcate the skills necessary to continue their education after graduation, as well as for the societal needs.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Program Educational Objectives (PEOs) of the department of CSE are given below:

PEO1: Gain Successful Professional career in IT industry as an efficient software engineer.

PEO2: Succeed in Master / Research programmes to gain knowledge onemergingtechnologiesinComputerScienceandEngineering.

PEO3: Grow as a responsible computing professional in their own area of interest with intellectual skills and ethics through lifelong learning approach to meet societal needs.

PROGRAM SPECIFIC OUTCOMES (PSOs)

The Computer Science and Engineering Graduates will be able to:

PSO1: Apply mathematical foundations, algorithmic principles and computing techniques in the modelling and design of computer - based systems

PSO2:Designanddevelopsoftwareintheareasofrelevanceunderrealistic constraints.

PSO3: Analyze real world problems and develop computing solutions by applying concepts of Computer Science.

CONTENT

1.BI-DIRECTIONAL VISITOR COUNTER USING INTERNET OF THINGS

Digital Visitor Counter is gadget or framework that can peruse the approaching and active specialists or deals that tends to visit or genuinely visit a spot. The framework is proposed and planned in this paper that is the visitor counter that is bidirectional in highlight. This paper presents the plan and development of an advanced bidirectional guest counter (DBVC).

The DBVC is a solid circuit that assumes control over the assignment of checking number of people/guests in the room precisely and blares an admonition caution when the quantity of guests surpasses the limit furthest reaches of the corridor. When someone goes into the room then the count is increased by one and when any one leaves the room then, at that point the count is decremented by one.

The total number of people inside the room is additionally shown in the LCD (Liquid Crystal Display). In this framework, up to 500 approaching or active guests can be tallied utilizing microcontroller. Microcontroller is utilized here to make the most of a protected over countless visitors. This framework is basically needed in where mean the guests is required by the executive of that framework. The plan and shows are delivered in this project.

Introduction

Nowadays, Modern Technology has witnessed an epidemic rise. It makes human life much easier by simplifying the way of our life. It changed the methods of communication, different ways in products manufacturing, method of transportation, knowledge and thoughts of people. There is currently an interest for showing all environments' types using vision technology. Different sides of life need to propose many applications for counting entering and exiting objects. There are many examples to these applications like the interest of the merchants in the consumers number that entering or leaving their markets or malls during a period of time, also, Garage owner need to know the number of cars enter or exit his garage to control parking capacity. In Baghdad for example or any other big city that suffers jamming all time, the number of people and moving cars in any street and any block can control the centre of traffic to preventing traffic jams.

Internet of Things

Development boards, like Raspberry Pi and Arduino, are mostly common devices when the programmer prototype new IoT projects. Actually, they are small computers that can be connected and programmed using a standard Mac or PC. After they had been programmed, these development boards can control sensors in the one or more fields by connecting to them directly. In one field, using wireless networks is the best way to connect to the internet; Therefore, Raspberry Pi and Arduino don't have built-in support for wireless sensor networks (WSN). A cellular module or Wi-Fi was added to the board and the code used to access the wireless model was written.

Advantages

IoT Bidirectional Visitor counter in the hall, shopping mall, office entrance gate to count the total number of visitors. This device counts the total number of visitors entering through the gate & also counts the total number of visitors exiting through the different gates.

Conclusion

By connecting two transmitters and send their data to one central processing unit CPU on receiver, very accurate results can be achieved. All the sensors and microcontrollers work properly for long times to count all the visitors to the place that required to test

Article By

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R. PAVAN (17699A0536)

2.AUTOMATIC ATTENDANCE MANAGEMENT SYSTEM USING FACE RECOGNITION

Abstract

This paper is about the biometric attendance management. The automatic attendance management will replace the manual method, which takes a lot of time consuming and difficult to maintain. There are many biometric processes, in that face recognition is the best method. Here we are using the computer vision which is a field of deep learning that is used for the camera reading and writing and using TkInter to create a GUI application.

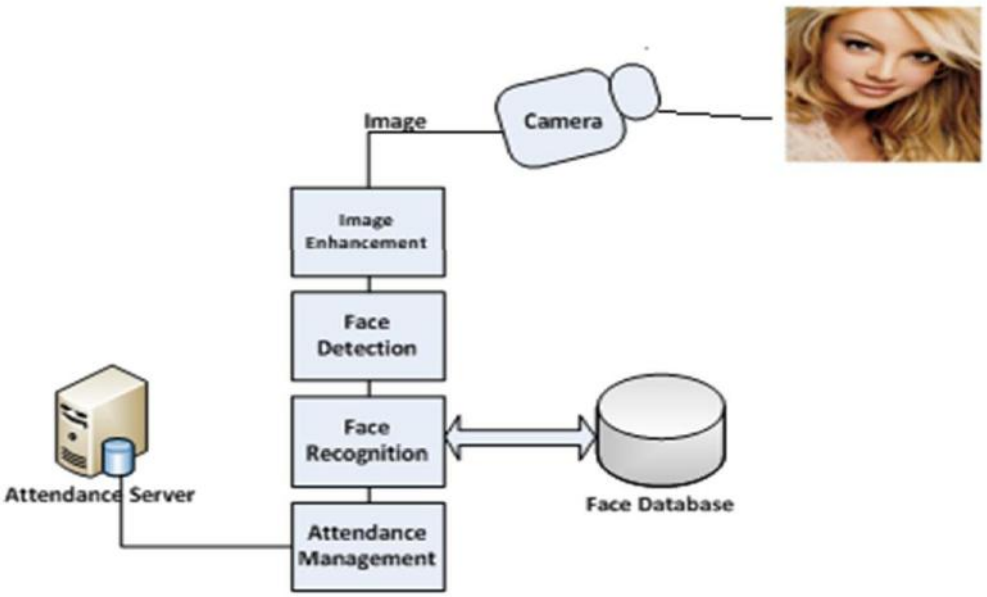
Face recognition technology

This technology has made many improvements in a changing world. Smart attendance using real-time face recognition is a real-world solution that comes with a method to handle the daily activities of student attendance systems. Attendance management can be a great burden for the teacher if it is done manually. To solve the problem, the smart attendance management has been used. Our attendance system takes the attendance automatically using the face recognition. In our method we using, continuous observation technique which improves the performance for the estimation of the attendance based on face recognition. Then, we introduced our system structure and plan. Finally, our attendance management system is implemented to provide as evidence to support the plan. The result shows that continuous observation improved the performance for the estimation of the attendance.

Being one of the most successful applications of the image processing, face recognition has a vital role in technical field especially in the field of security purpose. Human face recognition is an important field for verification purpose especially in the case of student's attendance. This paper is aimed at implementing a digitized system for attendance recording. Current attendance marking methods are monotonous & time consuming. Manually recorded attendance can be easily manipulated. Hence the paper is proposed to tackle all these issues.

System Description

The system consists of a camera that captures the images of the employee and sends it to the image enhancement module. After enhancement the image comes in the Face Detection and Recognition modules and then the attendance is marked on the database server. This is shown in the experimental setup. At the time of enrolment, templates of face images of individual employees are stored in the Face database. Here all the faces are detected from the input image and the algorithm compares them one by one with the face database. If any face is recognized the attendance is marked on the server from where anyone can access and use it for different purposes.



In this way a lot of time is saved and this is highly secure process no one can mark the attendance of other. Attendance is maintained on the server so anyone can access it for purposes like administration, employees themselves.

CONCLUSION

In this approach, a face recognition based automated student attendance system is thoroughly described. The approach provides a method to identify the individuals by comparing their input image obtained from recording video frame with respect to train image during the respective semester's registration process.

Article By

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3.HOUSE PRICE PREDICTION USING MACHINE LEARNING ALGORITHM

Abstract

Machine learning plays a major role from past years in image detection, spam reorganization, normal speech command, product recommendation and medical diagnosis. Present machine learning algorithm helps us in enhancing security alerts, ensuring public safety and improve medical enhancements.

Supervised learning and unsupervised learning problems. In supervised learning problems, both the actual data and the ground truth is available. The algorithms are trained using the ground truth and then evaluated on unseen data. In unsupervised learning algorithms, the ground truth is not known and based on the similarities between different features, the records are grouped into clusters.

Machine learning problems can be broadly divided into two categories

The supervised learning algorithms are further divided into two categories: classification and regression algorithms. In classification algorithms, the category to which an instance belongs is predicted. For instance, whether a message is a spam or ham; a bank note is real or fake; a tweet is positive or negative and so on. Regression algorithms, on the other hand, predict the continuous value i.e. the expected price of a house; the number of votes that a party is likely to get in general elections, the number of marks a student is expected to score etc.

In the previous posts (add links to previous three articles), we explained how different classification tasks such as sentimental analysis, banknote authentication and customer churn can be predicted using classification algorithms. In this article, we will see how regression algorithms are used to predict continuous value.

Where to Find the Data?

The data set for this problem along with all of its statistical details is freely available at this Kaggle Link. The dataset contains price record of different houses in Kings County, USA. The details of the dataset such as the minimum and maximum value for a particular column and histograms for each column are also available at the given link. To make things simpler, download the data into a local directory.

Importing Libraries and Dataset

As always, the first step to develop a machine learning problem is to import the required libraries along with the dataset. The following script import the required libraries:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
```

And the following script imports the dataset:

```
house_data = pd.read_csv('D:\housing_dataset.csv')
```

	date	price	bedrooms	bathrooms	sqft_living	sqft_lot	floors	waterfront	view	...	grade	sqft_above	sqft_basement	yr_built	yr_renovated
0	20141013T000000	221900.0	3	1.00	1180	5650	1.0	0	0	...	7	1180	0	1955	0
1	20141209T000000	538000.0	3	2.25	2570	7242	2.0	0	0	...	7	2170	400	1951	1991
2	20150225T000000	180000.0	2	1.00	770	10000	1.0	0	0	...	6	770	0	1933	0
3	20141209T000000	604000.0	4	3.00	1960	5000	1.0	0	0	...	7	1050	910	1965	0
4	20150218T000000	510000.0	3	2.00	1680	8080	1.0	0	0	...	8	1680	0	1987	0

Exploratory Data Analysis

The task is to predict price, depending upon all the other variables. The price, in this case, is our dependent variable while all the other features are dependent variables. Let's try to see if there is any relationship between price and some of the other features in our dataset.

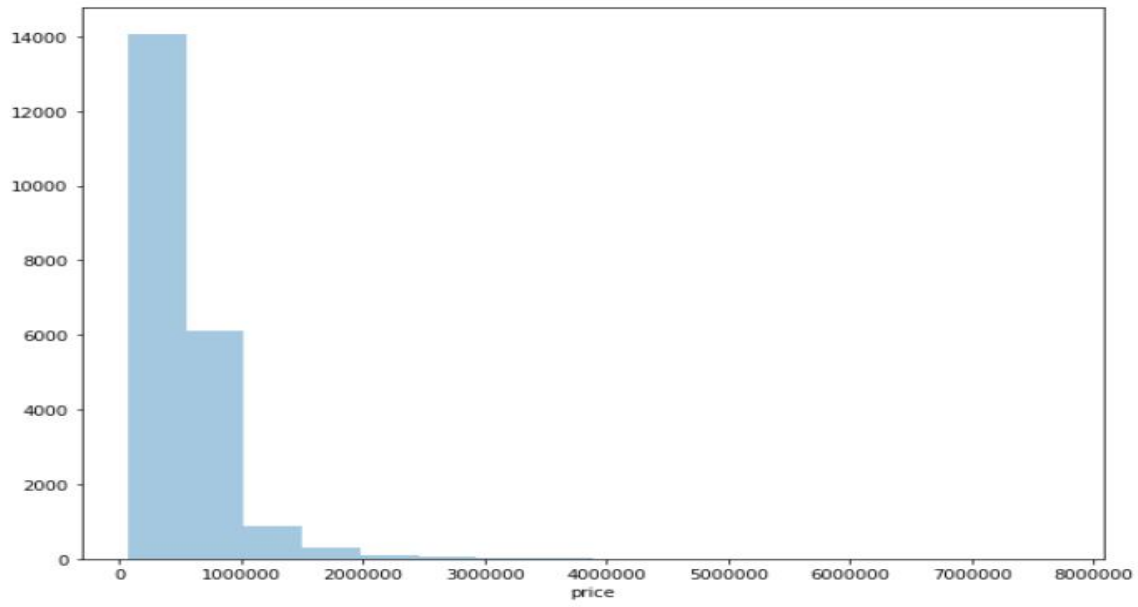
Before drawing any plots, execute the following script to increase the plot size.

```
import matplotlib.pyplot as plt
fig_size = plt.rcParams["figure.figsize"]
fig_size[0] = 10
fig_size[1] = 8
plt.rcParams["figure.figsize"] = fig_size
```

Let's first see the price distribution. Execute the following script:

```
sns.distplot(house_data['price'], kde=False, bins=8)
```

The output looks like this:



Evaluating the Algorithms

We used two regression algorithms to train machine learning models. The models used are linear Regression and Random Forest Regression.

Linear Regression

Let's first train the linear regression model to see how well the trained model performs. Execute the following script:

```
from sklearn.linear_model import LinearRegression
regressor = LinearRegression()
regressor.fit(train_features, train_labels)
```

We trained our model on the training set using the "fit()" method of the LinearRegression class from the sklearn.linear_model module.

Next, we need to make predictions on the test set. To do so, execute the following script:

```
predicted_price = regressor.predict(test_features)
```

Now our model has been trained, the next step is to evaluate the performance of the model. The metrics used for the evaluation of linear regression model are root-mean-square error (RMSE), mean squared error (MSE), and mean absolute error (MAE). The following script finds the value for these metrics for the linear regression algorithm:

```
from sklearn import metrics
print('Mean sAbsolute Error:', metrics.mean_absolute_error( test_labels, predicted_price))
print('Mean Squared Error:', metrics.mean_squared_error(test_labels,predicted_price))
print('Root Mean Squared Error:', np.sqrt(metrics.mean_squared_error(test_labels, predicted_price)))
```

The output looks like this:

```
Mean Absolute Error: 126522.39741578815
Mean Squared Error: 39089803087.07735
Root Mean Squared Error: 197711.41364897817
```

Random Forest Regressor

Execute the following script to train the machine learning model using Random Forest Regressor.

```
from sklearn.ensemble import RandomForestRegressor
regressor = RandomForestRegressor(n_estimators=200, random_state=0)
regressor.fit(train_features, train_labels)
```

The next step is to predict the output values:

```
predicted_price = regressor.predict(test_features)
```

And finally, the script below finds the performance metrics values for the random forest algorithm:

```
from sklearn import metrics
print('Mean Absolute Error:', metrics.mean_absolute_error( test_labels, predicted_price)) print('Mean Squared Error:', metrics.mean_squared_error(test_labels,predicted_price)) print('Root Mean Squared Error:', np.sqrt(metrics.mean_squared_error(test_labels, predicted_price)))
```

The output of the script above looks like this:

```
Mean Absolute Error: 70467.01934555387
Mean Squared Error: 16251802750.754648
Root Mean Squared Error: 127482.55861393215
```

Conclusion

From the output, it is visible that the random forest algorithm is better at predicting house prices for the Kings County housing dataset, since the values of MAE, RMSE, MSE for random forest algorithm are far less compared to the linear regression algorithm.

Article By

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4.CRIME DATA ANALYSIS USING ML

The criminal cases in India are increasing rapidly thanks to which number of cases pending also are piling up. This continuous increase within the criminal cases is proving to be difficult to be classified and to be solved. Recognizing the criminal activity patterns of an area is vital so as to stop it from happening. The crime solving agencies can do a far better job if they need an honest idea of the pattern of criminal activities that are happening during a particular area. This will be done by using machine learning by employing different algorithms to seek out the patterns of the criminal activities during a particular area. This paper uses a crime data set and predicts the kinds of crimes during a particular area which helps in speeding up the classification of criminal cases and proceed accordingly. This paper uses the info of the past 18 years that's collected from various trusted sources. Data pre-processing is as important as final prediction, this paper used feature selection, removing null values and label encoding to wash and nourish the info. This research gives an efficient machine learning model for predicting subsequent criminal cases.

Motivation

To solve a case based upon a particular data there should be a thorough investigation and analysis that is to be done internally [1]. With the amount of crime data that is present in India currently the analysis and decision making of these criminal cases is too difficult for the officials. Identifying this a major problem this paper concentrates on creating a solution for the decision making of crime that is committed. the vehicle starts driving on its own. An autonomous driving vehicle performs various actions to arrive at its destination, repeating the steps of recognition, judgment, and control on its own.

Objectives

The DDS learns a genetic algorithm using sensor data from vehicles stored in the cloud and determines the optimal driving strategy of an autonomous vehicle. This paper compared 2 the DDS with MLP and RF neural network models to validate the DDS. In the experiment, the DDS had a loss rate approximately 5% lower than existing vehicle gateways and the DDS determined RPM, speed, steering angle, and lane changes 40% faster than the MLP and 22% faster than the RF.

Outcome

It executes the genetic algorithm based on accumulated data to determine the vehicle's optimal driving strategy according to the slope and curvature of the road in which the vehicle is driving and visualizes the driving and consumables conditions of an autonomous vehicle to provide drivers. To verify the validity of the DDS, experiments were conducted on the Desoto select an optimal driving strategy by analyzing data from an autonomous vehicle. Though the DDS has a similar accuracy to the MLP, it determines the optimal driving strategy 40% faster than it. And the DDS has a higher accuracy of 22% than RF and determines the optimal driving strategy 20% faster than it.

Applications

Data mining and machine learning have become a vital part of crime detection and prevention. In this research, we use WEKA, an open-source data mining software, to conduct a comparative study between the violent crime patterns from the Communities and Crime Unnormalized Dataset provided by the University of California-Irvine repository and actual crime statistical data for the state of Mississippi that has been provided by neighborhoodscout.com. We implemented the Linear Regression, Additive Regression, and Decision Stump algorithms using the same finite set of features, on the Communities and Crime Dataset. Overall, the linear regression algorithm performed the best among the three selected algorithms. The scope of this project is to prove how effective and accurate the machine learning algorithms used in data mining analysis can be at predicting violent crime patterns.

Conclusion

It is clear that basic details of criminal activities in a neighbourhood contain indicators that will be employed by machine learning agents to classify a criminal activity given a location and date. The training agent suffers from imbalanced categories of the dataset, it had been ready to overcome the problem by oversampling and under-sampling the dataset.

Article By

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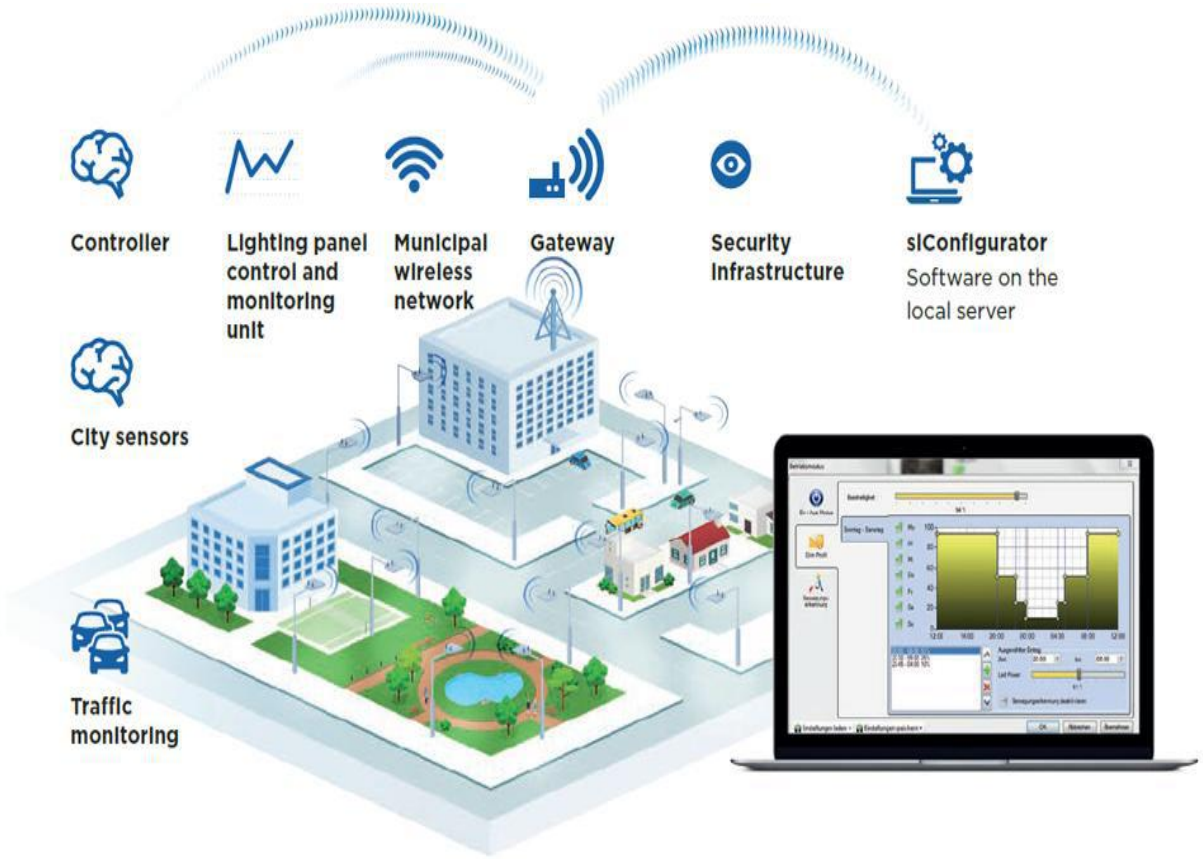
5.AUTOMATIC STREET LIGHT MONITORING SYSTEM

Street lights are automatically turned on and off based on the sunlight. If the intensity of sunlight is high then street lights are automatically turned off and on. This system is used to avoid unnecessary usage of electricity and also used to reduce manpower. Project aim is to design a lighting system which targets the energy saving and autonomous operation on economical affordable for the streets and immediate remedy on complaints. Energy consumption various services can be recorded and accounted. A well-designed, street lighting system should permit vehicles /pedestrians to travel at night with good visibility, in safety and comfort, while reducing many malfunctions that occur during night and enhance the appearance of the neighborhood.

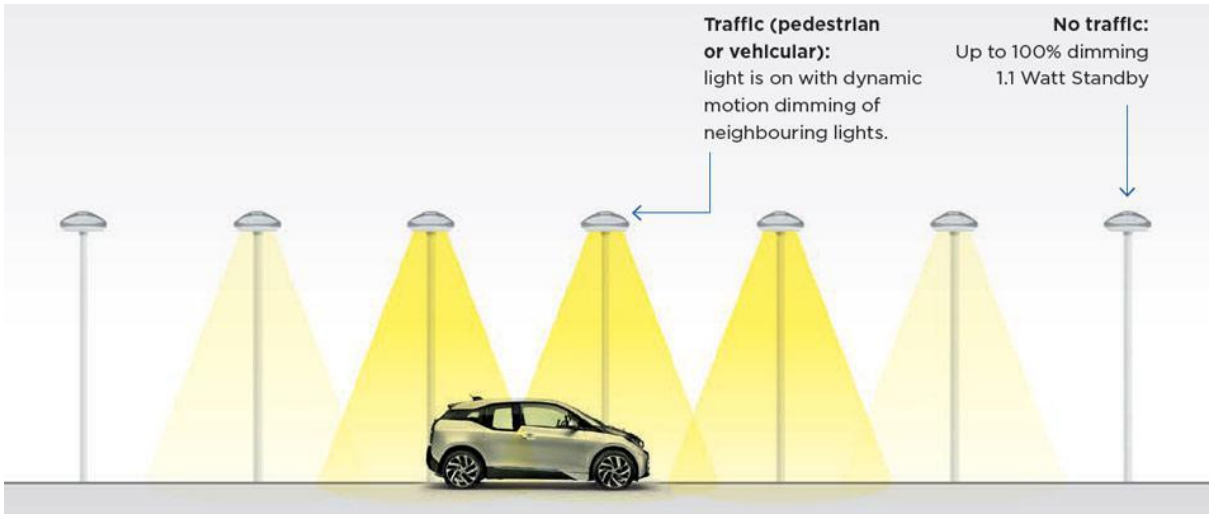
The future of street lighting



The intelligent street lighting

slControl offers an intelligent street lighting solution. Energy consumption and therefore ongoing operating costs can be significantly reduced, without compromising comfort and security, by the targeted dimming of LED lights. In addition to reduced energy consumption, dimming also extends the lifetime of lights and makes a valuable contribution to reducing light pollution. Street lights can be dimmed automatically through slControl, as long as no or just a little light is needed. If the sensors detect pedestrians, cyclists or cars the intensity of the lighting is raised and adapted for a specific street section. In addition to the standard built-in wireless communication, various sensors can be connected as required.

Street Light Control System

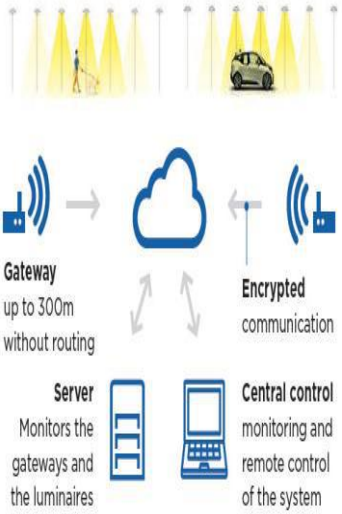


Compared to normal LED street lighting you increase energy efficiency up to 90% with the intelligent lighting system. This extends the lifetime of the luminaires and reduces maintenance costs.

The system can always be adapted to new conditions, so that a perfect illumination of the road is always guaranteed. Since the illumination of a street section is only increased as required, the light pollution can be considerably reduced.

User-friendly and intuitive software

Street lights which are equipped with SmartBox automatically connect via a wireless network. By a laptop or tablet and the slControl USB-Dongle you can access the network to configure, control or monitor the slControl lights. To keep the overview, the user is supported by the user-friendly Windows software. This makes complicated configurations easy and intuitive. To protect the system from unauthorized access, all transmitted data is encrypted. In addition, the network can be protected with a pin code.



Conclusion: The significant aim of this project is to save the electricity, reduce economic and ecological cost using sensors and microcontrollers the above-specified aims are achieved and thus we can provide a cost-effective and energy potent restoration for the ongoing street light system.

Article By

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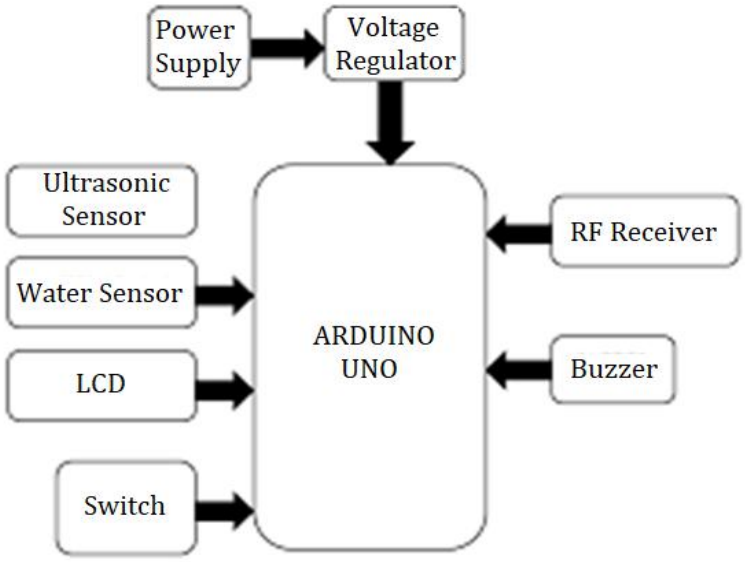
6.SPECIAL NAVIGATION CANE FOR SUPPORTING BLIND PEOPLE IN OUTDOOR USAGE

Visually impaired people find difficulties in detecting obstacles in front of them, during walking in the street, which makes it dangerous. The smart stick comes as a proposed solution to enable them to identify the world around. One of the most challenging limitations for the visually impaired (VI) persons is the inability of independent navigation. The purpose of this study is to build and test an outdoor navigation system to assist VI persons' navigation independently in urban areas. The proposed system assists VI persons walk independently on sidewalks with the help of an augmented cane following magnetic or continuous metallic trails installed on sidewalks.

Abstract

Visually impaired people are the people who can't identify smallest details with their eyes. The electronic aiding devices are designed to solve such issue. This project designs a special navigation cane that detects the reflected, emitted or transmitted electro-magnetic radiation provided by natural energy sources by sensors and measures the distance between the blind person and the obstacle accurately.

Architecture



Tools and Platform Used

Arduino UNO, IR sensors, Ultrasonic sensor, Buzzer, Arduino Software (open-source IDE), Embedded C (Programming language).

Working

The proposed special navigation cane detects the reflected, emitted or transmitted electro-magnetic radiation from the obstacles by using different sensors and measures the distance.

Conclusion

The special navigation cane acts as a basic platform for the coming generation of more aiding devices to help the visually impaired to be safer. This system offers a low-cost, reliable, portable, low power consumption and robust solution for navigation with obvious short response time. Though the system is hard-wired with sensors and other components, it is light in weight.

Article By

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K.KEDAR SREENIVAS (18695A0504)

7.INTRUDER DETECTION SYSTEM

The intruder detection system is targeted for the private areas, restricted areas and for the domestic home applications to notify the entrance of the intruder or any person to the specified areas. This intruder detection system eliminates the theft and entrance of the persons to the restricted areas by notifying the owner or the gardener through the registered application when the system detects an intruder in the locality. The aim of the project is to develop an environment for the required location to avoid the entrance of the person without any special workforce for the location. The following is the functioning of the environment when we setup the environment in the selected location the setup will continuously in the work of searching the objects. If anyone enters into the premises the system will detect the intruder and sends notification to the owner of the locality as the intruder is entered into your premises. Based on the notification the owner of the area can protect the premises without any loss.

The need for Intrusion Detection Systems

A computer system should provide confidentiality, integrity and assurance against denial of service. However, due to increased connectivity (especially on the Internet), and the vast spectrum of financial possibilities that are opening up, more and more systems are subject to attack by intruders. These subversion attempts try to exploit flaws in the operating system as well as in application programs and have resulted in spectacular incidents like the Internet Worm incident of 1988.

HOW DOES IDS WORK?

Intrusion detection systems serve three essential security functions: they monitor, detect, and respond to unauthorized activity by company insiders and outsider intrusion. Intrusion detection systems use policies to define certain events that, if detected will issue an alert. In other words, if a particular event is considered to constitute a security incident, an alert will be issued if that event is detected. Certain intrusion detection systems have the capability of sending out alerts, so that the administrator of the IDS will receive a notification of a possible security incident in the form of a page, email, or SNMP trap. Many intrusion detection systems not only recognize a particular incident and issue an appropriate alert, they also respond automatically to the event. Such a response might include logging off a user, disabling a user account, and launching of scripts.

Network Intrusion Detection Systems

A network IDS (NIDS) monitors all traffic on the network segment that it is placed on. This is generally accomplished by placing the network interface card in promiscuous mode to capture all network traffic that crosses its network segment. Network traffic on other segments can't be monitored unless the traffic is directed to the NIDS promiscuous interface.

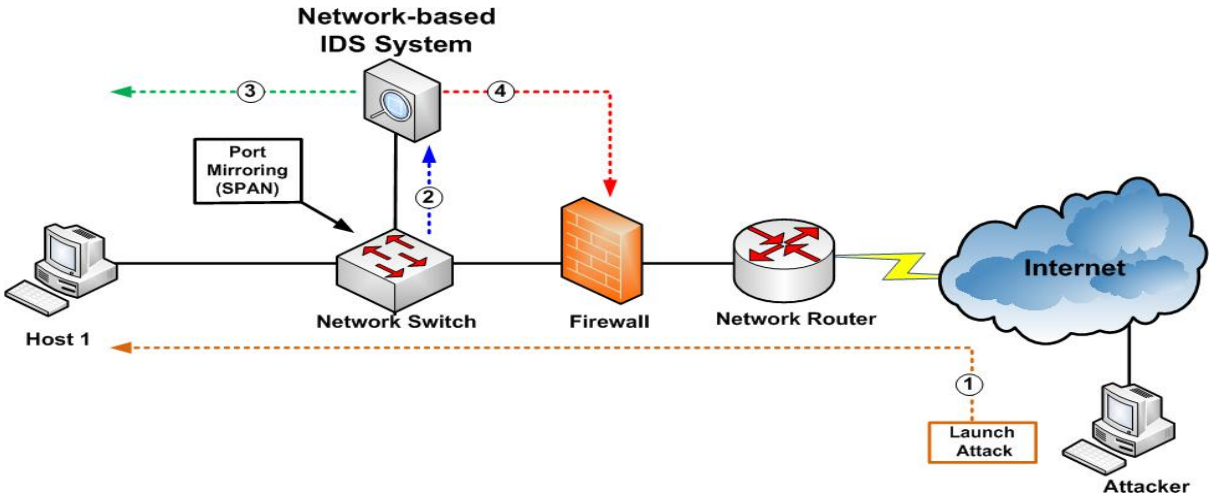
Network Intrusion Detection involves looking at the packets on the network as they pass by the NIDS. The NIDS can only see the packets that are carried on the network segment it's attached to. Packets are considered to be of interest if they match a signature or certain behavior. Network Intrusion Detection Systems are placed at a strategic point or points within the network to monitor traffic to and from all devices on the network. Ideally you would scan all inbound and outbound traffic; however doing so might create

a bottleneck that would impair the overall speed of the network.

Host Based Intrusion Detection Systems

A Host IDS (HIDS) uses a piece or pieces of software on the system to be monitored. The loaded software uses log files and/or the system's auditing agents as sources of data. In contrast, a NIDS monitors the traffic on its network segment as a data source.

Host based intrusion detection involves not only looking at the network traffic in and out of a single computer, but also checking the integrity of your system files and watching for suspicious processes. To get complete coverage at your network with HIDS, you must load the software on every computer. Host based Intrusion Detection is much more effective in detecting insider attacks than is NIDS. Host Intrusion Detection Systems are run on individual hosts or devices on the network. A HIDS monitors the inbound and outbound packets from the device only and will alert the user or administrator of suspicious activity is detected.



Conclusion

Intrusion Detection is still a fledgling field of research. However, it is beginning to assume enormous importance in today's computing environment. The combination of facts such as the unbridled growth of the Internet, the vast financial possibilities opening up in electronic trade, and the lack of truly secure systems make it an important and pertinent field of research. Future research trends seem to be converging towards a model that is a hybrid of the anomaly and misuse detection models; it is slowly acknowledged that neither of the models can detect all intrusion attempts on their own.

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