COMPUTER NETWORKING

APRIL 2021

LIST OF PROJECTS

DIPLOMA IN COMPUTER NETWORKING

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INTELLIGENT MACHINE LEARNING BASED PHISHING DETECTION

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                                                             Sowmiya R   (19CH02)

In the last decades, the web and online services have revolutionized the modern world. However, by increasing our dependence on online services, as a result, online security threats are also increasing rapidly. One of the most common online security threats is a so-called Phishing attack, the purpose of which is to mimic a legitimate website such as online banking, e-commerce or social networking website in order to obtain sensitive data such as user-names, passwords, financial and health-related information from potential victims.

The problem of detecting phishing websites has been addressed many times using various methodologies. The project is developed using simplest, flexible and compact "PHP" which is an efficient GUI based application development tool with a reliable and securable Back End tool "MYSQL". Secure online transactions, authentication is the first line of defense against compromising confidentiality and integrity. Though traditional login/password-based schemes are easy to implement, they have been subjected to several attacks. As an alternative, token and biometric based authentication systems were introduced. However, they have not improved substantially to justify the investment.

Thus, a variation to the login/password scheme, viz. graphical scheme was introduced. But it also suffered due to shoulder-surfing and screen dump attacks. We introduce a framework of our proposed phishing webpage detection for secure online transactions, which is immune to the common attacks suffered by other authentication schemes. The project is totally built at administrator end and thus only the admin is guaranteed for the access. The main purpose of the project is to build a web application program to reduce the manual work.
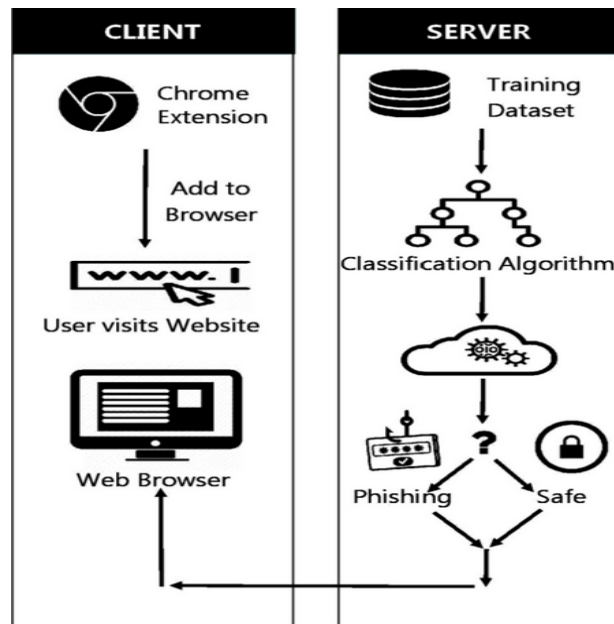
AI BASED FACE MASK RECOGNITION WITH RFID TRACKING SYSTEM

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Corona viruses are a large family of viruses which may cause illness in animals or humans. The most recently discovered coronavirus causes coronavirus disease COVID-19. Many countries in the world ordered nationwide lockdown limiting movement of the entire population of their countries as a preventive measure against the COVID-19 Pandemic. From 4 May 2020, the lockdown in India was eased with several relaxations in all zones per Ministry of Home Affair's guidelines and most activities are permitted outside of containment zones. People were seen breaching the lockdown and not following social distancing by crowding in public places such as fish market, Supermarket, etc.

The World Health Organization (WHO) recommends the following measures to suppress transmission of virus and save lives: Wearing face masks, social distancing and frequently cleaning hands with Sanitizers. Security personnel in Supermarkets and malls perform duties including enforcement of physical distancing norms and regulation at market places. But still the spreading of viruses is gradually increasing day by day. The main objective of the proposed system is to provide an enhanced virus prevention and security system for shopping malls which incorporates the following features: Automatic face mask recognition to detect whether the visitor is wearing a mask or not, automatic hand sanitizing dispenser, IR body temperature screening, RFID based People tracking system.

Facial mask recognition system is a technology that detects whether the person has a mask or without a mask. This application alerts the security personnel when a visitor is not wearing a mask automatically. Automatic hand sanitizing dispenser is mainly used for touch free purposes to avoid the spreading of the virus. The IR body temperature sensor has been attached to scan the human body temperature. When the temperature is above 100 degree it alerts by the beep sound and by RGB LEDs.

RFID based tracking system is also incorporated to help the people visiting the mall by providing a safe and secure environment. Every visitor will be given a RFID tag. RFID tags are used to track the visitor. Once a valid card is read by RFID reader, Data read from the RFID tags are sent from raspberry pi to the server database. Through internet it will send SMS, containing the exact location of the person inside the mall. If a person has any health issues, they can contact or message using this application. From the server with the help of RFID, the security personnel can track the exact location of that person and provide medical aids. This application is not only used for cases like this but also to safeguard women from eve teasing, male harassment etc.
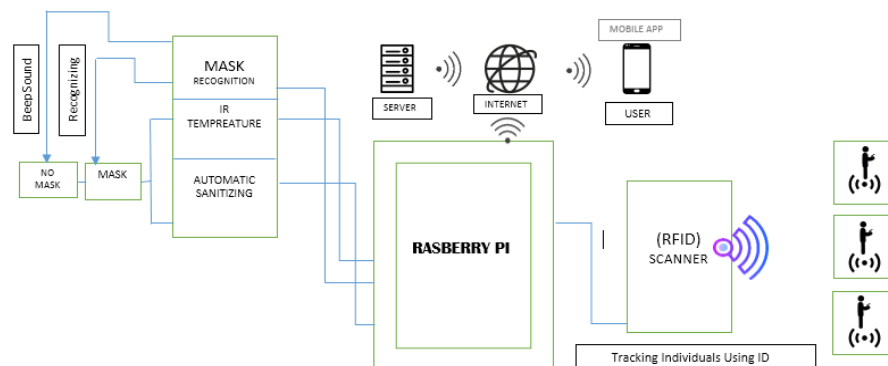
ENHANCED MOBILE APPLICATION DEVELOPMENT FOR PLASMA AND MOTHER FEED BANKS

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Covid-19 is currently spreading as a deadly disease and till today no medicine has been found for this disease. Alternatively now a day's plasma transplant surgery is also being performed rapidly. At this present time plasma banks are in short supply. Not only that, but the number of plasma donors is low too. And some people do not know what plasma donation is and where to donate plasma. We have set up a system to alleviate this situation and help needy people to identify plasma donors and plasma banks.

As the world grows in this modern age, only a few babies are born prematurely without the nutrients they need to grow. Mother feed provides the best nutrition for those babies after birth. But babies do not even get Mother feed properly. So those children get many more defects and become infected. We found a news on the social media site that a woman donated her Mother feed to help and rectify the situation. We have set up a system to encourage that action and help them. Today mobile and mobile based applications have become a part of our day to day life.

The main objective is to develop an Android application to build a network of people (Donors, Recipients and Health care departments) who can help each other. This Android application is developed to easily search for plasma, mother feed and blood in nearby areas for emergency.

If the user would like to donate Plasma during an emergency then they must register in this app as a voluntary blood donor. At any given point in time if the donor chooses to deactivate being a blood donor on this platform they can just do it easily. This application also has the functionality to assist the recipients to find suitable donors and communicate directly with Plasma banks and Mother feed banks. When the user wants to find a donor, it analyses the people in contact who have also registered in this application as a blood donor. This application has the list of the Plasma and Mother feed banks around. The user can call the banks or visit them directly to get any help in arranging the appropriate Plasma or Mother feed.
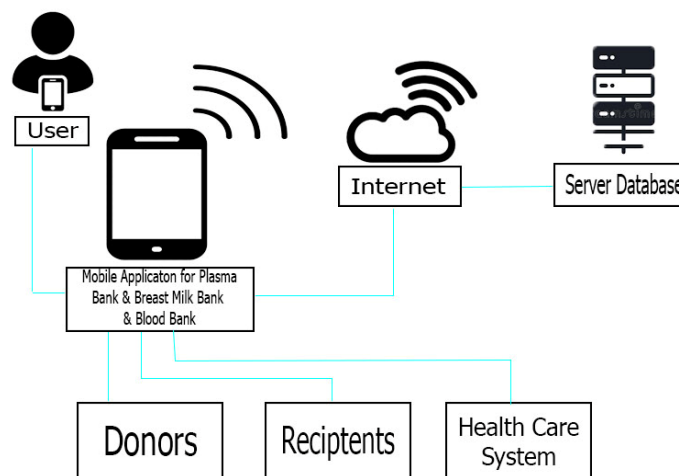
SMART AUTONOMOUS WHEELCHAIR

GUIDE   **STUDENTS NAME**

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The wide spread prevailing loss of limbs is day-today scenario due to accidents, age and health problems. A touch controlled wheelchair using the Arduino to help the disabled patients and physically challenged person by using touch sensor to control the movement of wheelchair in different directions. An additional feature is to control basic home appliances with the help of remote device which is very useful for a handicapped person to operate home devices.

Touch Controlled Wheelchair based on the Arduino to control a wheelchair wirelessly using transmitter circuits. This wheelchair can be controlled through touch sensors. For the wireless communication 433Mhz, RF transmitters and Receivers will be used. This Tongue controlled wheelchair can be controlled from two different locations. We are using An RF transmitter circuit provided with touch sensor. So this Wheelchair can be controlled wirelessly using touch sensors.

And also an additional feature is added to control the home appliances using home automation system by remote device, the physically disabled people can control light, fan and door. This home automation system is based on 4CH Channel 433Mhz controlled by wireless remote transmitter

The implementation of this proposed model mainly involves two steps. The first step is the identification of which the hall effect sensor is activated and then sending the desired command to the wheelchair wirelessly. The Tongue controlled wheelchair when receives the commands, these commands are tested depending on the predefined conditions and then accordingly operate the wheelchair. in the above circuit, It consists of 4 buttons, one side of all the buttons are connected with ground and the other ends are connected with the desired Arduino pins as defined in programming. The 433Mhz radio transmitter is connected with the Arduino. Its data pin is connected with the pin12 and the other pins are connected with5v and GND to power up the transmitter.

PEER TO PEER - SOLAR ENERGY SHARING USING BLOCK CHAIN IN IoT

GUIDE   **STUDENTS NAME**

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The system distributes power on an on-demand basis to maximize on-site solar usage. Each apartment will have a device that constantly monitors the energy usage (load) and feeds this information to the SolShare unit. Using this information, the SolShare will direct solar energy to the apartments in relation to how large their load is at any specific time. This optimized sharing means that the on-site solar usage is 30-35% higher than an individual system, limiting the amount of solar that is not used. The SolShare is the most efficient system to maximise the use of energy generated at any given time. It achieves this by supplying energy to where it is needed most, instead of sending it back to the grid. Any excess energy not used by an apartment (or common light and power) will be sent back to the grid and compensated for accordingly.

- ➢ A SolShare system can generate up to 40% savings on your electricity bills
- ➢ Any excess energy not used by an apartment is sent back to the grid and compensated for by your electricity retailer.
- ➢ This optimized sharing means that the on-site solar usage is 30-35% higher than an individual system.

This is data from a live SolShare install. The install consists of 8 units of varying energy demands. Every month the SolShare begins recording the amount of solar delivered to each unit. Units 1 and 8 are high energy users and 2-7 are average users. At the beginning of the month, the SolShare sends power at a ratio of the power that is being used, fully optimising on-site solar usage. However, towards the end of the month, the SolShare identifies that units 2-7 have received less than their fair share of solar. The SolShare, therefore, reduces the amount of solar that is sent to units 1 and 8 and distributes the excess to units 2-7. This active distribution optimizes the amount of onsite solar that is consumed, saving each user the most amount from their energy bills, while ensuring that everyone receives their fair share of solar energy. If the system is unable to equalise the amount of solar delivered to each unit by the end of the month due to unforeseen circumstances, like a few cloudy days, then the difference is rolled over to the following month. An example of this can be seen with unit 8. It received more energy than the other units in the first month so begins the next month at an increased starting point to the other units. This project containing three modules:

- Module 1 (installation of solar panel)
- Module 2 (installation of smart meter)
- Module 3 (earning an income from their solar systems)
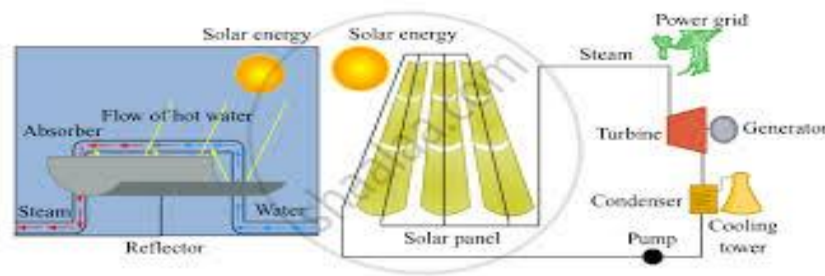
INTELLIGENT POWER LINE MANAGEMENT SYSTEM USING IoT

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In this modern world, there is lot of technology helping human beings in different ways like medical, transportation, communication, etc. And we still have more areas, that are should be developed, and one of that is Transformer power line is cut in the streets during rainy seasons. This happens in a rate of 7/10 in many under-developing countries. Still we don't have a solution for this problem. In order to overcome the difficulty, we proposed an "Transformer Power Line Shutdown System using IoT".

IoT is an emerging paradigm of Internet connected things that allow the physical objects or things to connect, interact and communicate with one another similar to the way humans talk through the web in today's environment. It connects systems, sensors and actuator instruments to the broader Internet. The applications of IoT are not limited to particular fields, but span a wide range of applications such as energy systems, homes, industries, cities, logistics, health, agriculture, and so on.

For a good Electricity System, a EB member needs to monitor the line from time to time. This project mainly focuses on line monitoring using IoT devices which would provide relief to the members. An Arduino Microcontroller board with sensors is used to communicate with another Arduino Board. This work invoked to take a preventive measure during the crisis situations and seasonal changes. This proposed system involves three modules (1) hardware kit, it consists of sensors connected in Arduino programming board and GSM was integrated in the board to make use of the IOT feature. (2) The integrated hardware device is placed in both transformer and line post. (3) The voltage can be measured and monitored in real-time by the application developed. There are two Node MCU modules fixed at both the Main Transformer and the Pole.

The communication is established and communicated until the power to the line from the Main Transformer to the Pole is passed without any interruption. In case, the power line from the Main Transformer to the Pole cuts, then the communication between the two modules also cuts. With the communication cut-off, it sets a trigger in the Main Transformer Node MCU module, which stops the electricity from passing, to the power line. Then a recorded call or a text message is sent to the Head of the Electricity Board, automatically to inform and handover the ongoing situation to the respected person. In the developed app, we can check the voltage on the power line to easy track down the area of voltage drops in the system.
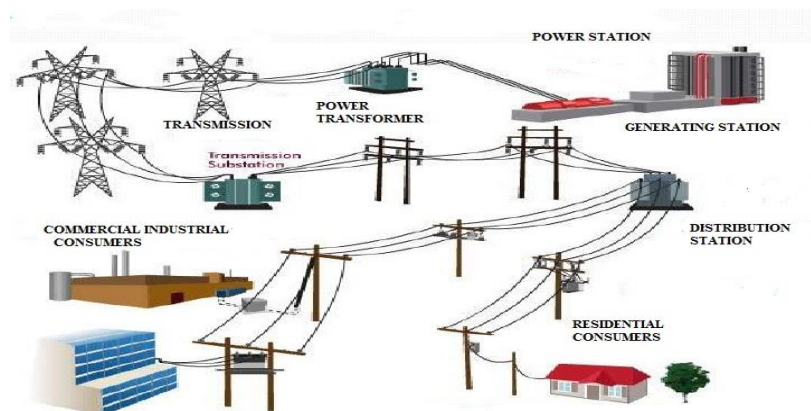
FAST AND ACCURATE LiDAR SEMANTIC SEGMENTATION USING EDGE COMPUTING
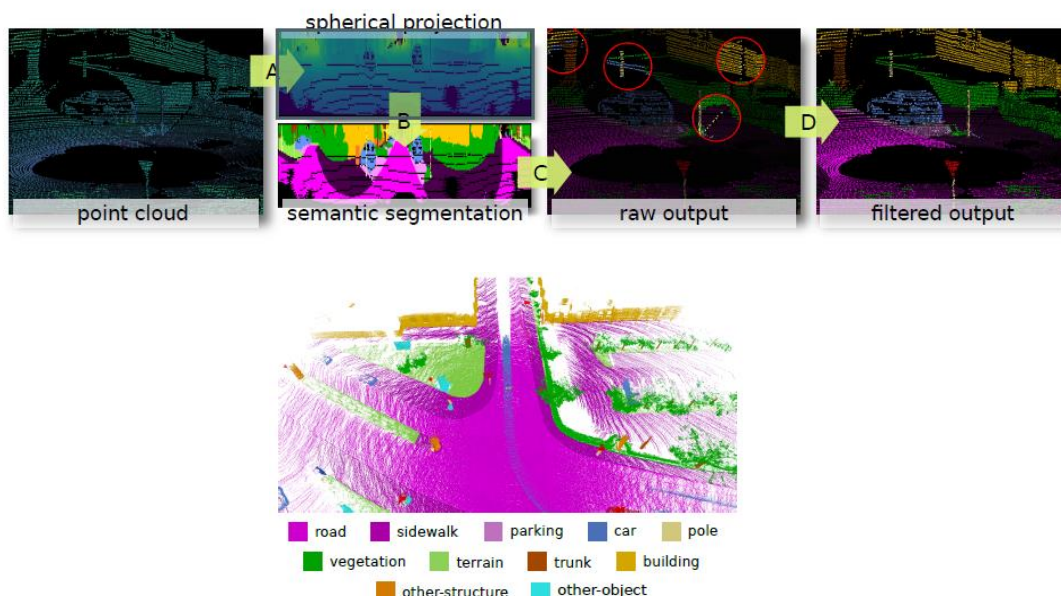
GUIDE

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Semantic scene understanding is one of the key building blocks of autonomous robots working in dynamic, real-world environments. To achieve the required scene understanding, robots are often equipped with multiple sensors that allow them to leverage the strengths of each modality. Combining multiple complementary sensing modalities allows for covering the short comings of individual sensors such as cameras, laser scanners, or radars. This is particularly critical in the context of autonomous driving, where a failure of one modality can have lethal or significant monetary consequences in case it is not properly covered by another redundant sensor. An important tasks in semantic scene understanding is the task of semantic segmentation. Semantic segmentation assigns a class label to each data point in the input modality, i.e., to a pixel in case of a camera or to a 3D point obtained by a LiDAR. In this paper, we explicitly address semantic segmentation for rotating 3D LiDARs such as the commonly used Velodyne scanners. Unfortunately, the majority of state-of-the-art methods currently available for semantic segmentation on LiDAR data either don't have enough representational capacity to tackle the task, or are computationally too expensive to operate at frame-rate on a mobile GPU. This makes them not suitable to aid the task of supporting autonomous vehicles, and addressing these issues is the aim of this work.

Semantic segmentation for autonomous driving using images made an immense progress in recent years due to the advent of deep learning and the availability of increasingly large-scale datasets for the task, such as CamVid, Cityscapes or Mapillary. Together, this enables the generation of complex deep neural network architectures with millions of parameters achieving high-quality results. Prominent examples are Deep lab V3and PSPNet. Despite their impressive results, these architectures are too computationally expensive to run in real-time on an autonomous system, which is a must for autonomous navigation exploiting semantic cues.

This spawned the creation of more efficient approaches such as Bonnet, ENet,ERFNet , and Mobilenets V2, which leverage the law of diminishing returns to find the best tradeoff between run time, the number of parameters, and accuracy.

SMART MULTI PARAMETER INDUSTRY PROTECTION SYSTEM

GUIDE

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The Smart multi parameter industry protection system is designed to protect industries from losses due to accidents using Internet of things. Gas leakages may lead to fires leading to huge industrial losses, also instant fire detection is needed in case of furnace blasts or other conditions. Also low lighting in industries may create improper work conditions increasing the probability of accidents. The system makes use of arduino to achieve this functionality. The system makes use of temperature sensing along with light and gas sensing to detect fire, gas leakage as well as low lighting to avoid any industrial accidents and prevent losses.

The system consists of light, gas and temperature sensors interfaced with arduino and LCD screen. The sensor data is constantly scanned to record values and check for fire, gas leakage or low light and then this data is transmitted online. The wifi module is used to achieve internet functionality. The IOT gecko server then displays this information online, to achieve the desired output.

The system consists of light, gas and temperature sensors interfaced with arduino and LCD screen. The proposed system is a platform which allows multi-parameters analysis of air, gas, sound and temperature. So the proposed system offers better efficient and differentiate with existing system. The pollutants when released from industries or when fire is detected the system gets activated. When carbon-di-oxide goes above the defined level or threshold value the system gives an alarm to the authority.