

## **An Identification of Oil Spill Using Deep Learning Algorithm**

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Oil spills are a very dangerous occurrence for marine ecosystem. It is affected and the Marine life-forms existence gets unnecessarily threatened. Oil destroys the insulating ability of fur-bearing mammals, such as sea otters, and the water repellency of bird's feathers, thus exposing these creatures to the harsh elements. Without the ability to repel water and insulate from the cold water, birds and mammals will die from hypothermia, as a result, it becomes important to early detect the oil spills in marine environment. The identification of oil spills in oceanic environments is a critical task that requires accurate and timely detection to minimize environmental damage. Deep learning Convolutional Neural Networks (CNN) have been proven effective in image classification tasks, and have recently been applied to the detection of oil spills in satellite imagery. In this study, we propose a CNN architecture for the identification of oil spills in satellite images, by utilizing transfer learning to improve the model's accuracy. To provide automatic detection of oil pollution from not only maritime accidents but also deliberate discharges in this region, a deep learning-based object detector was developed. The trained object detector has an average precision (AP) of 69.10% and 68.69% on the validation and test sets, respectively, and it could be applied for building an early-stage oil contamination surveillance system. The proposed model is trained on a large dataset of satellite images, including both oil spill and non-oil spill images, to learn the features that distinguish oil spills from other features in the images. The model achieves high accuracy in identifying oil spills, and demonstrates potential for real-time detection and monitoring of oil spills in oceanic environments.

### **Keywords:**

Oil spill detection, Deep Learning, Convolutional Neural Network (CNN), Open CV

identification innovation which can be made by ultrasonic sound. This technology is used to detect the obstacle and it gradually slow down the speed of the train by applying the air brake to stop the train before the mishap occurs. In this project the sensors are placed on the track to detect the rail and objects on the track when an object will be detected on the track which may cause an impact of an accident then as soon as the object detected the train speed will be reduced and stopped at an particular distance and the buzzer will be alarmed to alert the animals on the track and the information of the train stopped on the track will be informed to the near railway station from the stopped location. By this method many losses lives will be saved in the forest reserved and the accidents on the track at rainy seasons also get reduced.

**Keywords:**

Buzzer, railway network management, sensors.

**Classification of Brain Tumor and Hemorrhage Using Deep Neural Network**

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In February 2018, the WHO found that brain or central nervous system (CNS) cancer deaths were greatest in Asia. Targeted therapy requires cancer staging. Non-invasive, cost-effective, and fast brain cancer characterisation and grade estimation methods are needed since cancer diagnosis is intrusive, time-consuming, and expensive. MRIs, CTs, and others may detect tumours quickly and safely. The patient's prognosis and the survival rate can both improve with timely and precise diagnosis. Using images from an MRI or CT scan, CNN is able to identify brain tumours. We build a CNN network with data augmentation that is capable of autonomously diagnosing complicated conditions like brain lesions and hemorrhages bloodclots without requiring input from the user. This network can recognise the features of complex classification tasks. In the system that is being suggested, contact mechanisms have been replaced with several neural or hidden layers. The broad picture that is provided by

Feature Extraction is helpful to us in the pre-processing of the MRI image. The previous methods of image processing cannot compare to the effectiveness and reliability of this technology. using techniques such as conv2D, maxpool2D, Flatten, and Dense hidden layers. The patient's life was spared as a direct result of the model's accurate prediction. According to the proposed model, there was neither a tumour nor a bleed, nor was there a blood clot. This model has an accuracy rating of 98 percent.

**Keywords:**

Brian Tumour, Deep Neural Network, MRI, CT, CMS.

**Smart Shopping Trolley with Web Based RFID Billing System**

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Nowadays, buying and searching products at huge malls is turning into a daily activity in cities. We can see large rush at malls on holidays and weekends. The rush is even a lot if there are special offers and discount. People purchase different things and place them in trolley. After total purchase one needs to go to cashier for payments. The cashier prepares the bill by scanning the bar code with bar code reader that could be a time overwhelming method and leads to long queues at charge counters. This paper targeted to minimize the Queue at a billing counter in a shopping complex. Smart Trolley does the same by displaying the total price of the product kept inside the cart on the customer mobile that was connected to a store server and RFID reader. In this way the customer can directly pay the amount at the billing counter or pay through online transaction and leave with the commodities he/she has bought. The implementation is based on Web Application, RFID Reader Module and RFID Tags. This process can take a lot of time and it can be even worse on holidays, special offers or weekends. To overcome this, a smart way to shop in malls has been developed. Each product has an RFID tag instead of a barcode. The Smart Trolley features an RFID reader, LCD module.

## **Farm Monitoring and Controlling Using IoT**

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Agriculture is the most important and worshipped occupation in India. Agriculture is livelihood for the most of the Indian who has rural background. The supreme and back breaking task of farmers is watering the crop and to control pest which destroy crops. Water is main resource for Agriculture. Irrigation is one method to supply water. In this irrigation process people are wasting water more by missing the timings. So to save water and time we have an excellent method called Automatic irrigation system using IoT. In this system, we are using various sensors. These sensors will find the various parameters of the soil such as temperature, humidity and based on soil moisture percent, land gets automatically irrigated. It means when field needs water then automatically motor will get ON and it will get OFF when it's got enough. These sensed parameters, weather Information and Motor status will be displayed on user devices. On the other hand, monitoring a pest insect is a key issue in crop production at farm level. It should be routinely monitored by human operator even it is highly impossible to control it. Indeed, decisions should be taken to avoid pests. In this system, UV light is used to reduce pest. Insects are able to see UV radiation because insects are often attracted to light sources which emits large amount of UV radiation which helps in the reduction of pests and insect by trapping it. Using LDR sensor light can automatically turn ON and OFF by sensing outdoor environment. All the field parameters along with the status of water pump and light can be displayed in the web application. In case of indoor farming or shed type of farming, temperature and humidity can be artificially controlled to maintain the desired level.

### **Keywords:**

Watering, Pest, Timings, Automatic, Soil moisture sensor, DHT 11 Sensor, LDR Sensor, Node MCU, humidity producer, weather, IoT

(Simulink). As per the MATLAB (Simulink) executed outcome, the neural network gives better outcome result than the existing techniques which has greater capability to overcome the associated concern issues and their output response are compared with existing work. Henceforth, the total harmonic distortion (THD) in TR (torque ripple), PF (power factor) and SC (stator current) gives the comprehensive output value using proposed method.

**Keywords:** PV-Dynamo hybrid source, Quasi-Z source H6 Inverter (QZSH6I), Neural Network Inference system, PMSM, THD

### **Design and Analysis of Battery Management System in Electric Vehicle**

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This research work deals with several key technologies of Battery Management system, including battery modelling, state estimation and battery charging. Batteries have been widely applied in many high power applications, such as Electric vehicle and hybrid electric vehicle. Electric vehicle as high energy and current density, due to this lithium-ion batteries are widely used. Improper operations such as over-current, over-voltage or over-charging/discharging will cause significant safety issue which accelerate the aging process, cause fire or explosion, therefore a suitable battery management system is used to ensure safe and reliable operation of batteries. Besides, some battery internal states such as state of charge (SOC), state of Health (SOH) and internal temperature play an important role in managing operation of batteries. Battery types of Electric vehicles used are also discussed.

**Keywords:** Battery management system, Battery modelling, Battery state estimation, Battery charging, Lithium-ion battery.

**An Innovative Two-Level Model for Electric Vehicle Parkinglots in Distribution Systems  
with Renewable Energy Team Members**

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With the rapid growth of Electric Vehicles (EVs) in distribution systems, a new player, called EV parking lot operator (EV PLO), is emerging around the world. Furthermore, the integration of distributed generation in the distribution level, in particular, renewable energy sources (RESs), is leading to the establishment of various markets in distribution systems. On one hand, such PLOs aim at managing their EVs within their parking lots to participate in the distribution markets and to maximize their profits. On the other hand, a distribution system operator (DSO) seeks to minimize the system-wide cost while minimizing renewable power spillage and the side-effects of its intermittency. This interaction inspires the innovative twolevel model proposed in this paper. In the first level, a new model is proposed for EV PLOs which models the EVs' characteristics, including EV owners' uncertainties, in a reasonably accurate manner. These PLOs are allowed to participate in energy, reserve and regulation distribution markets by optimally managing their EVs. In the second level, a new model is developed to ensure that the technical constraints in the distribution networks are met while minimizing the overall system cost. In addition, this work evaluates the effects of the penetration level and the placement of wind and solar PV on the offering strategies of EV parking lots, as well as on the overall performance of the distribution systems.

**Key Words:**

EV, PLO, Distribution System Operator, Solar PV

**OPTIMIZED GLOBAL MAXIMUM POWER POINT TRACKING OF  
PHOTOVOLTAIC SYSTEM BASED ON RECTANGULAR POWER COMPARISON**

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**Smart Channel Allocation of Spectrum in Cellular/Wifi Using CognitiveRadio  
Network**

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Cognitive radio networks have emerged as a promising technology to address the spectrum scarcity issue in wireless communication. Smart channel allocation is one of the key functions of cognitive radio networks that enables efficient spectrum utilization by dynamically assigning available channels to unlicensed secondary users while protecting the licensed primary users. This paper proposes a novel smart channel allocation scheme that utilizes machine learning algorithms to predict the availability of channels and allocate them to the secondary users in a cognitive radio network. In this paper, we present a study of different approaches and techniques w.r.t. spectrum allocation in cognitive radio network. We not only compare them in terms of the assignment scheme, execution model, etc. but also highlight their contributions and shortcomings. Additionally, we also highlight the security attacks on spectrum allocation. The challenges that a CR spectrum allocation technique should take into consideration are also discussed in the end with the hope of aiding future research. The proposed scheme considers various factors such as channel quality, interference level, and user priority to make intelligent decisions on channel allocation. Simulation results demonstrate the effectiveness of the proposed scheme in achieving high spectral efficiency and low interference to primary users, which can significantly enhance the performance of cognitive radio networks in practice.

**Keywords:**

Cognitive radio networks, smart channel allocation, Spectrum scarcity, Interference level, Spectral efficiency, Primary users.