

## Abstract

### **A Framework for Phytopathology using Deep Learning**

The tea-growing environment in hilly regions are conducive to a large number of pests and diseases. In order to get high yield and quality tea we need to increase the productivity of our agricultural industries. Analysing the size, growth and performance of tea plants in a plantation site can be time-consuming and laborious. More specifically, when a field site is located in a remote area, it becomes quite expensive to send people out to the field. The ability to collect this information from remote locations in real time will become a valuable tool for the farmers and plant scientists. This can be made possible by integrating the two technologies, IOT and Deep Learning.

IoT is one of the most important technologies of everyday life, and it will continue to pick up steam as more businesses realize the potential of connected devices to keep them competitive. Internet of Things (IoT) describes the network of physical objects that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools. Seamless communication is possible between people, processes, and things. In this hyperconnected world, digital systems can record, monitor, and adjust each interaction between connected things. The proposed system is an IoT based wireless multisensor network working autonomously and independently, to record environmental conditions, pests detection and identify the factors which lead to changes in leaf patterns and wirelessly transfer this data to a data store in real time.

Deep learning is an important element of data science, which includes predictive modelling. This can create complex statistical models and create accurate predictive models from large quantities of unlabelled, unstructured data. Deep learning is represented by a spectrum of architectures that can build solutions for a range of problem areas. The number of architectures and algorithms that are used in deep learning is wide and varied.

Hence the proposed research is aimed to

- (i) Study and identify the major plant stressors which leads to the yield of tea plants;
- (ii) Develop a deep network architecture for analysis of plants.