**Abstract**
**To obtain optimal results in hydroponics, intensive control is required. For this, an IoT-based hydroponic environmental control system may be proposed. However, manual control through the IoT system that is made is not necessarily optimum. The purpose of this paper is to propose a Deep Neural Network (DNN) as predictive control to classify appropriate control measures and evaluate their comparison to manual control. With 4000 control data obtained from the self-developed IoT system, a classification is carried out using DNN to produce an optimum model which is then applied in the IoT system to predict the appropriate control action for hydroponics. From the experiments that have been carried out, the model that has been trained has an accuracy of 81%. After testing the model on the live IoT system, through observation, the model can improve the performance of manually controlling the hydroponic IoT.**

**Keyword: Internet of Things, Hydroponic, Lettuce, Deep Neural Networks, Predictive Control**