



UNIVERSITY of
RWANDA

College of Science and Technology

Africa Center of Excellence in Internet of Things (ACEIoT)

Research Seminar Presentation

Implementation of IoT Framework with Data Analysis Using Deep Learning Methods for Occupancy Prediction in a Building.



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Abstract:

Many countries worldwide face challenges in controlling building incidence prevention measures for fire disasters. The most critical issues are the localization, identification, detection of the room occupant. Internet of Things (IoT) along with machine learning proved the increase of the smartness of the building by providing real-time data acquisition using sensors and actuators for prediction mechanisms. This paper proposes the implementation of an IoT framework to capture indoor environmental parameters for occupancy multivariate time-series data. The application of the Long Short Term Memory (LSTM) Deep Learning algorithm is used to infer the knowledge of the presence of human beings. An experiment is conducted in an office room using multivariate time-series as predictors in the regression forecasting problem. The results obtained demonstrate that with the developed system it is possible to obtain, process, and store environmental information. The information collected was applied to the LSTM algorithm and compared with other machine learning algorithms. The compared algorithms are Support Vector Machine, Naïve Bayes Network, and Multilayer Perceptron Feed-Forward Network. The outcomes based on the parametric calibrations demonstrate that LSTM performs better in the context of the proposed application.