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Development of an Energy Consumption Prediction Model for University Buildings

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Abstract

Energy use in university buildings is a growing cost and sustainability concern, yet Sri Lankan universities lack tools to anticipate monthly consumption and act before it peaks. This study is an approach to developing an Energy Consumption Prediction Model for Sri Lankan University Buildings. As a sustainable approach, a prediction model can be used to predict the energy consumption for a period of time, in this case, a month. Preventive measures can be taken to address and prevent it from reaching that predicted amount. To achieve this goal, a machine learning system was developed along with a dataset. The dataset was created based on data collected from a questionnaire survey conducted at the Faculty of Computing and Technology, University of Kelaniya, and processed through energy modelling and related calculations to be unbiased with variations. A feedforward neural network model was the approach taken to construct the prediction model. The accuracy of the dataset was proven to be above 90% at K-number testing, while the prediction model, even though operational, was not validated by a comparison to actual data due to unavailability of data at the time of publication.

Keywords: *energy consumption prediction; energy modelling; feedforward neural network; machine learning; university buildings*