

# **CIND 860: Advanced Data Analytics Project**

**Section: DJH**

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## ABSTRACT

Electric Energy (energy) is needed for residential and commercial purposes like food is needed for human survival. Due to scarcity of this resource, better demand management and accurate forecasting is extremely necessary. This will help power companies and residential and commercial users in better planning and utilization of this key resource effectively. (Hong Et Al.). Therefore, for this project the dataset that is chosen is “Short-term electricity load forecasting (Panama case study)” (Kaggle). Dataset is taken from kaggle and it contains 48048 rows and 16 columns. The dataset has daily post-dispatch reports and weekly pre-dispatch reports from grid operator. Calendar information is taken from Panama’s Ministry of Education and “When on Earth” website. The weather variables such as temperature, wind speed etc for three main cities in Panama are taken from Earthdata.

The problem being considered for the project is to forecast energy demand accurately. The research questions considered for this project are: 1. Which time-series deep learning algorithms (LSTM, GRU etc) can accurately forecast the daily/weekly energy consumption using hourly period? 2. How accurate is the deep learning algorithms forecast compare to official forecast from pre-dispatch report provided? 3. How accurate is the deep learning algorithms forecast compare to traditional machine learning algorithms?

The tools that will be used are Python libraries used for deep learning and traditional machine learning algorithms. The systematic data analysis process approach will be used for the project. After data selection, initial analysis will be carried out followed by the exploratory analysis

(EDA). Then experimental design and model building will be carried out. Finally performance evaluation will be done together with project limitations and conclusion.

## **REFERENCES**

Hong Et Al. retrieved from <https://ieeexplore.ieee.org/document/9040610>

Kaggle retrieved from  
<https://www.kaggle.com/datasets/saurabhshahane/electricity-load-forecasting/code>