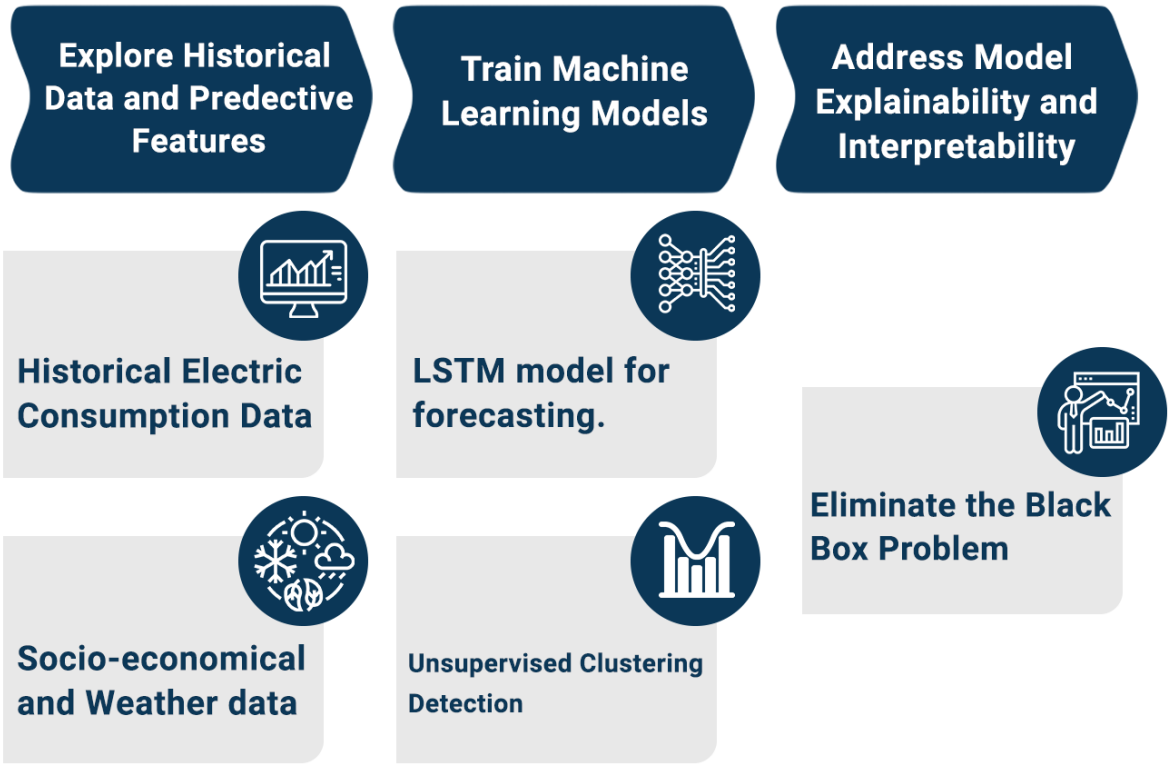
Deep Learning for Real-Time Monitoring of the Price and Demand of the Electric Grid

In this thesis, we investigate the utilization of deep learning techniques to accurately and efficiently monitor the price of and demand for electricity using weather, temporal, and socioeconomical features such as temperature, precipitation, wind speed, time of day, etc. Our deep learning model works in two stages: anomaly detection followed by price / demand prediction. We first utilize the available features to inform us of the possibility of having an anomaly state in the price / demand time series. Using an LSTM-based architecture, we managed to achieve a 74.4% precision in detecting anomalies. The next phase involves using the anomaly predictions to predict the price of and demand for electricity at any given hour of the day.



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