

The forecasting demand is rapidly increasing in almost every sector and organization. It is largely used by businesses to gain future insights and make informed decisions in order to increase their company growth and meet the customers' needs. Energy Sector also uses forecasting techniques for the accurate prediction of energy demand in the future to prevent energy crises.

The objective of my thesis (Medium-Term Load Forecasting) is to forecast the energy and peak power demand of Pakistan for the next year. Medium-Term Load Forecasting carries huge importance in the Power Sector of Pakistan as the resources required for the energy generation are quite expensive and they need to be allocated many months before. Therefore, proper budget planning and resource allocation require an accurate estimate of energy demand in the future using forecasting. In this thesis, we will explore different Machine Learning techniques to compare the energy forecasting results and try to develop a new state-of-the-art algorithm for more accurate forecasting. Since, the forecasting performance is largely affected by external factors like socio-economic, political, religious and random disturbances so we will also try to incorporate them in our models to compare the results. The scope of this thesis follows a top-down approach but future work may involve the forecasting for each energy distribution company of Pakistan (bottom-up approach) .