

**CHENNAI – PONDICHERRY**

**A DATA MINING APPROACH COMBINING K-MEANS CLUSTERING WITH BAGGING NEURAL NETWORK FOR SHORT-TERM WIND POWER FORECASTING**

**Abstract:**

Wind power forecasting (WPF) is significant to guide the dispatching of grid and the production planning of wind farm effectively. The intermittency and volatility of wind leading to the diversity of the training samples have a major impact on the forecasting accuracy. In this paper, to deal with the training samples dynamics and improve the forecasting accuracy, a data mining approach consisting of K-means clustering and bagging neural network (NN) is proposed for short-term WPF. Based on the similarity among historical days, K-means clustering is used to classify the samples into several categories, which contain the information of meteorological conditions and historical power data. In order to overcome the over fitting and instability problems of conventional networks, a bagging based ensemble approach is integrated into the back propagation NN. To confirm the effectiveness, the proposed data mining approach is examined on real wind generation data traces. The simulation results show that it can obtain better forecasting accuracy than other baseline and existed short-term WPF approaches.