

PROBLEM STATEMENT

DOMAIN:DATA SCIENCE

Predicting the Energy Output of Wind
Turbine Based on Weather Condition

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INTRODUCTION

Wind energy plays an increasing role in the supply of energy world-wide. The energy output of a wind farm is highly dependent on the weather condition present at the wind farm. If the output can be predicted more accurately, energy suppliers can coordinate the collaborative production of different energy sources more efficiently to avoid costly overproductions. With energy prediction based on weather data and analyze the important parameters as well as their correlation on the energy output. Reliable short-term wind speed forecasts play a practical and crucial role in wind energy conversion systems, such as the dynamic control of wind turbines and power system scheduling. A precise forecast needs to overcome problems of variable energy production caused by fluctuating weather conditions. Power generated by wind is highly dependent on the wind speed. Though it is highly non-linear, wind speed follows a certain pattern over a certain period of time. We exploit this time series pattern to gain useful information and use it for power prediction.

PROBLEM STATEMENT

- our aim is to map weather data to energy production.
- We wish to show that even data that is publicly available for weather stations close to wind farms can be used to give a good prediction of the energy output.
- Furthermore, we examine the impact of different weather conditions on the energy output of wind farms.
- We are building an IBM Watson AutoAI Machine Learning technique to predict the energy output of wind turbine.
- The model is deployed on IBM cloud to get scoring end point which can be used as API in mobile app or web app building.
- We are developing a web application which is built using node red service.
- We make use of the scoring end point to give user input values to the deployed model.
- The model prediction is then showcased on User Interface to predict the energy output of wind turbine