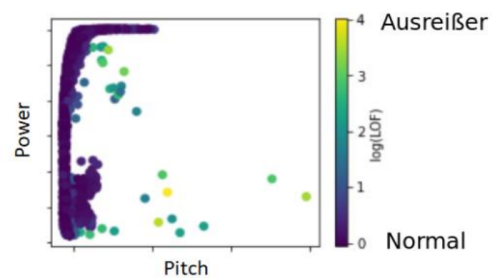
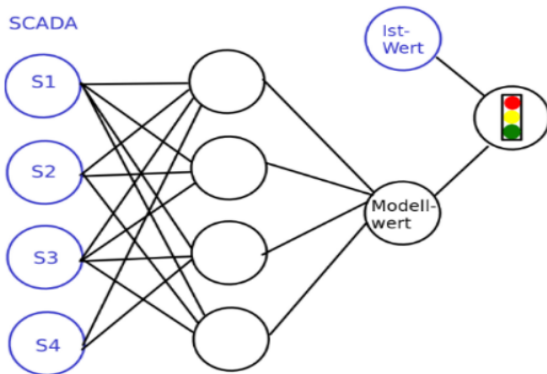
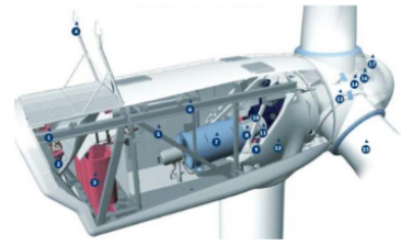


M.Sc.-Thesis / B.Sc.-Thesis: Wind Turbine Failure Prediction with Machine Learning Tools



Scope:

Condition based maintenance plays an essential role in further reducing the costs of wind energy. An effective maintenance is based on a reliable estimate of the state of wind turbines and an early prediction of possible failures. The project WiSA big data aims at developing corresponding data analysis tools based on a large and unique data set. This set consists of high frequency operating data of more than 100 wind turbines over three years plus corresponding alarmlogs and service data. A thesis could for example use neural networks in order to predict the temperature of a wind turbine component based on the operating data. Since the model will be trained with data of a healthy turbine, a large deviation of the model temperature from the measured one can be used as an indicator for possible faults and failures. Other methods of interest could be anomaly detection with autoencoders or support vector machines.

Work steps:

- Introduction to the data set and neural networks or other tools
- Implement a method on the basis of a subset of the data
- Apply the tool to the complete data set
- Statistical evaluation of the model performance possibly along with a physical interpretation of detected faults

Requirements:

- Very good programming skills, preferably with Python
- Strong interest in applied mathematics and machine learning
- Ability to work independently
- Basic understanding of a wind turbine

Place	ForWind - University of Oldenburg - AG WeSys
Begin	August 2022 or later
Duration	Approx. 6 months
Supervision	David Bastine david.bastine@uol.de