Weather sensor fault detection in Meteorological masts

Abstract:

Wind power has become the world’s fastest growing renewable technology. The recent development of advanced and inexpensive equipment has made possible to measure meteorological phenomena densely by building meteorological mast.

Data from the masts have been used for a wide range of projects including traditional and novel wind turbine power performance measurement among many others.

A major issue with wind power system and with meteorological masts is the relatively high cost of operation and maintenance (OM). Wind turbines and sensor tower are hard-to-access structures, and they are often located in remote areas.

Continuous monitoring of wind turbine health using automated failure detection algorithms can improve turbine reliability and reduce maintenance costs by detecting failures before they reach a catastrophic stage and by eliminating unnecessary scheduled maintenance. Supervisory control and data acquisition (SCADA) systems have become widely diffuse in modern wind energy technology.

In the present work, mathematical methods are proposed for sensor fault detection for meteorological masts through the analysis of the SCADA data. The idea is to compare and analyze measurements coming from the various sensors located in the same tower and different heights. We used a number of measurements to develop anomaly detection algorithms and investigated classification techniques using manual check and model parameter tuning.

These methods are tested on wind masts situated in Argentina.

Information from Mexico WindPower 2020.

Annex: Abstract Format Requirement Paper Topic（Times New Roman, Font size 14） Paper Author Company, city, postal code email address

Abstract: （Times New Roman, Font size 11, less than 400 words）

Key words:（Times New Roman, Font size 11, less than 5 words）

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