UL Solutions:

Machine learning in OpenRAVE

RAVE — RESEARCH AT ALPHA VENTUS

UL) Solutions

Development of a machine learning model for quality control of wind turbine load measurements

In the offshore R&D department at UL Solutions, a machine learning framework was implemented to perform a quality control check on measured data.

Model description:

- Deep neural network (DNN) with 22—30—15—1 neurons (two hidden layers)
- 57 initial features containing Supervisory Control And Data Acquisition (SCADA) data and meteorological data
- Optimization using feature selection (lasso regression) and principal component analysis (PCA)

Flagging logic:

- Green (0): Model and measurement in agreement
- Red (1): Model and measurement not in agreement
- Blue (2): Model and measurement highly correlated, possible calibration error, data can still be used

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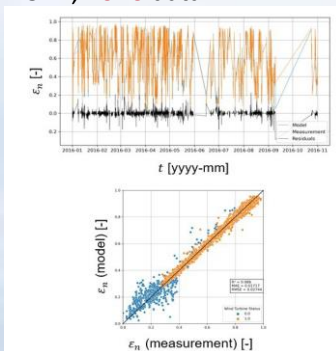
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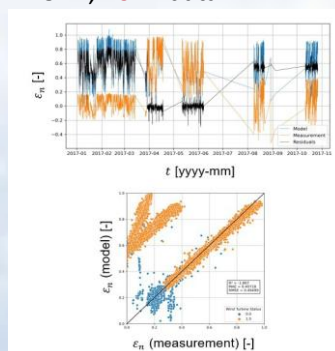marijn-floris-van-dooren-3ab67460/

Training:

AV07 blade 1 girder radial strain at 19 m; 2016 data
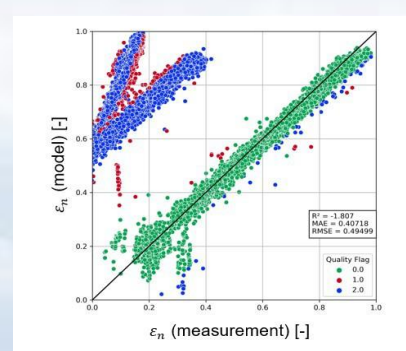

Application:

AV07 blade 1 girder radial strain at 19 m; 2017 data

Flagging:

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BSH BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE