1SC4392 – Prediction of wind farm production using IoT data

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Language of instruction:
Campus: CAMPUS DE PARIS - SACLAY
Workload (HEE): 40
On-site hours (HPE): 27,00

Description

After a first part presenting the deployment of IoT sensor networks in wind farm,s the second part will consist in processing the data collected by such sensors in order to monitor and predict the energy production of a wind farm, a third part will focus on the consumption prediction based on real data.

Quarter number
ST4

Prerequisites (in terms of CS courses)
Signal Processing
From information theory to IoT networks
Statistic and Machine Learning

Syllabus
- Context Presentation by industrial in this field
- dimensionning for the deployment of a sensor network
- data processing for monitoring and predicting the production of a windfarm and th user consumption

Class components (lecture, labs, etc.)
team working with practical exercises with ponctual help from the teaching team.
theoretical and methodogical briefs by the teaching team

Grading
report and final presentation

Resources

Teaching team composed of professors and external industrial partners
The students will work in small teams
Tools : computers and server adapted for massive data processing, Python

Learning outcomes covered on the course

The objective is to acquire the competencies resulting from the practice of the notions learnt during the ST4, in particular:
- For understanding the mechanisms and protocols that allow low cost sensors with stringent battery constraints transmitting their data.
- Data processing for analysis and prediction

Description of the skills acquired at the end of the course

The objective is to acquire the competencies resulting from the practice of the notions learnt during the ST4, in particular:
- For understanding the mechanisms and protocols that allow low cost sensors with stringent battery constraints transmitting their data.
- Data processing for analysis and prediction

Team working and presentation of the results will also contribute to the related competencies.

The corresponding reference competencies are :
C1, C2, C3, C4, C6, C7 et C8