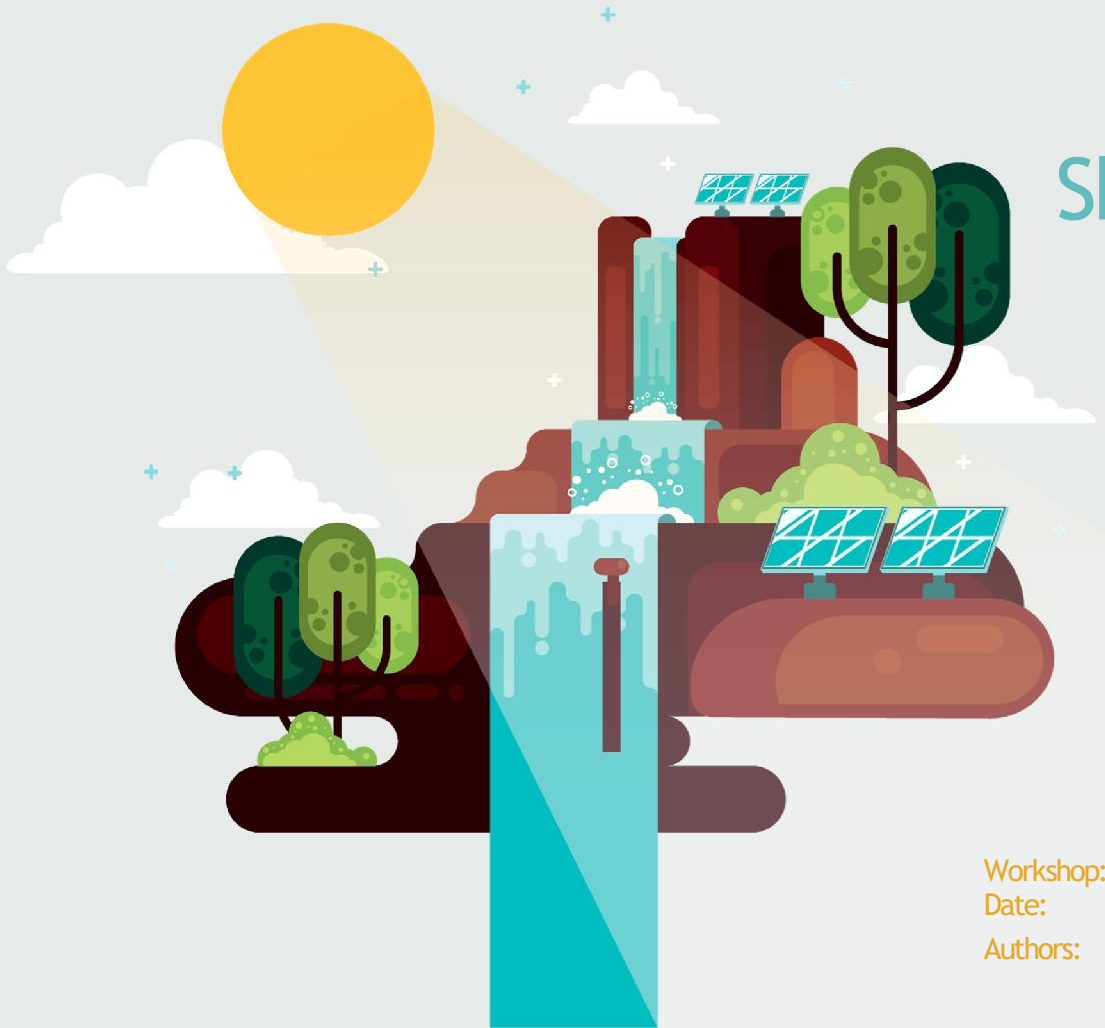
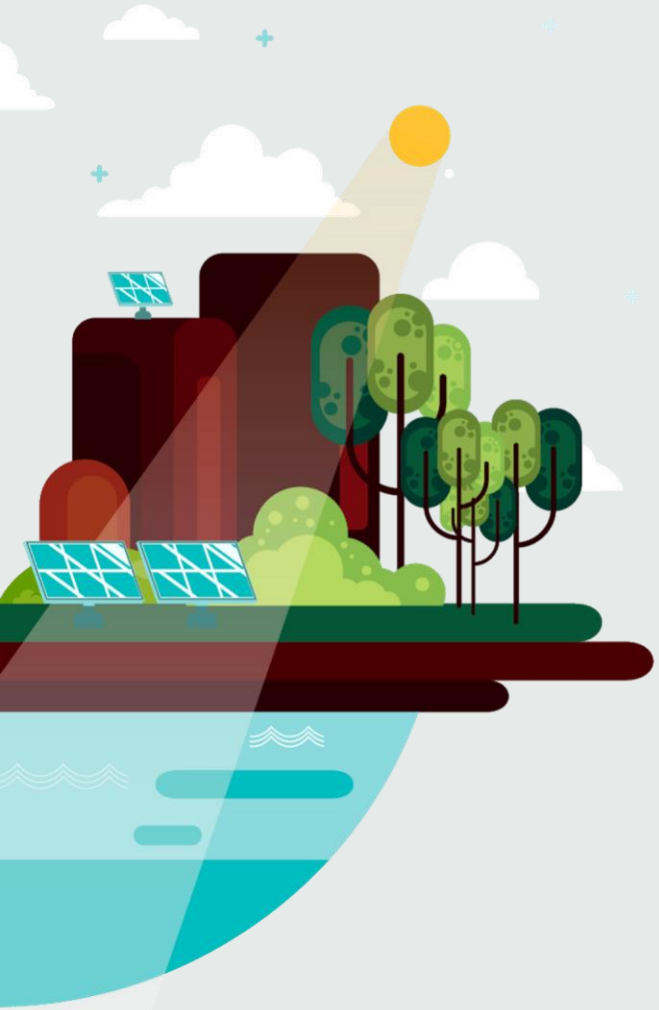


Short-term Prediction of Power Generated from Photovoltaic Systems using Gaussian Process Regression

Workshop: Tackling Climate Change with Machine Learning workshop
Date: 11th December 2020

Authors: Yahya Al Lawati, Jack Kelly and Dan Stowell



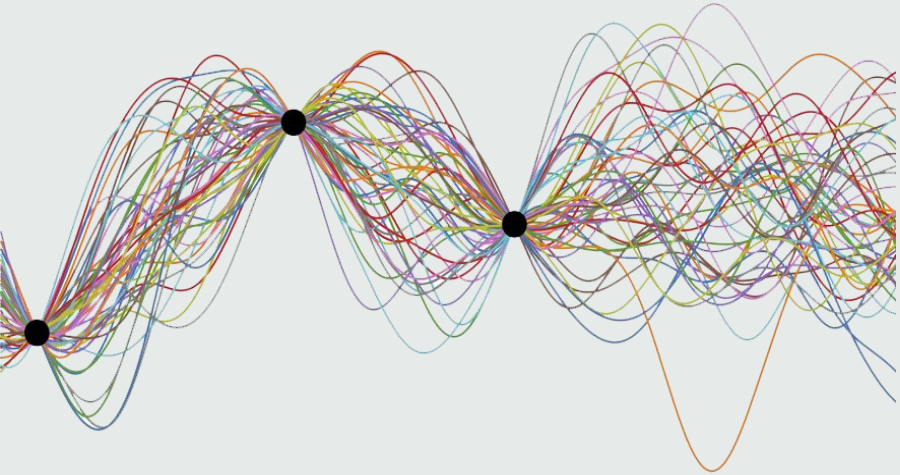
Renewable Energy

- Clean and infinite energy
- Importance of Solar Energy
- The challenge of Solar Energy
  - Dependency on weather conditions

Research Question

"Instead of using a more complicated models of Gaussian Processes, can a simple Gaussian Process Regression model accuracy enhance by depending on satellite images instead of Numerical Weather Predictions?"

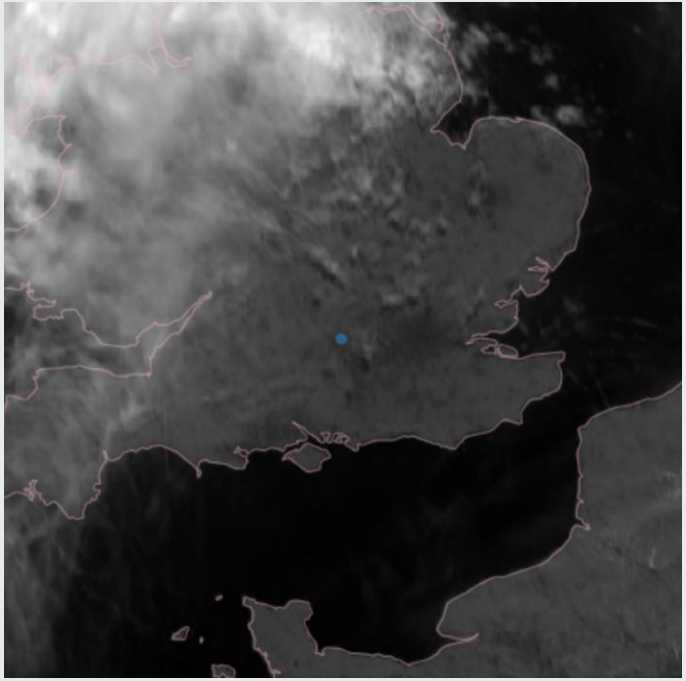
Gaussian Processes



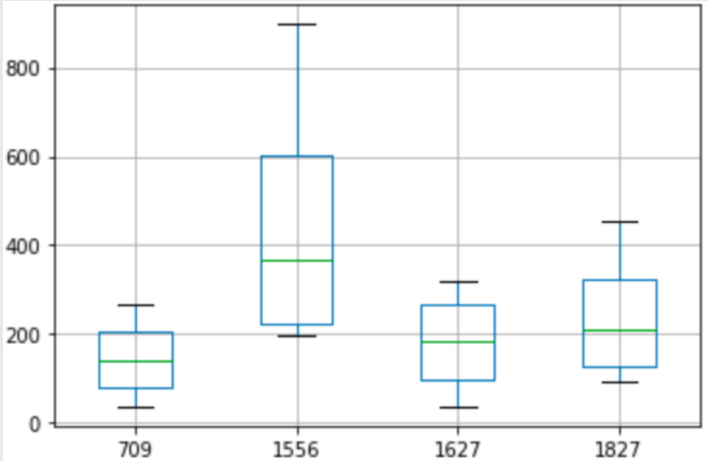
- Probabilistic Model
- Non-parametric
- Distribution over functions

Model Attributes

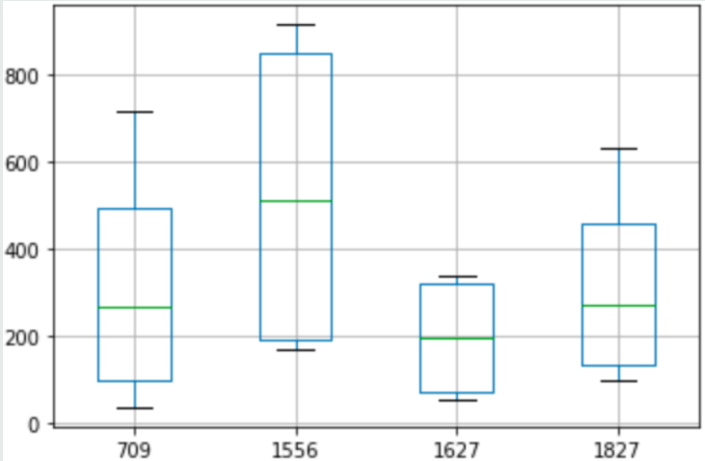
- Historical Data
- Cloud coverage



Results for 4 Hours Forecasts Tests



MAE box plot with outliers for four-hour forecasts with consideration of cloud coverage presented by the PV system



MAE box plot with outliers for four-hour forecasts without consideration of cloud coverage presented by the PV system

THANKS

Article Name: Short-term prediction of photovoltaic power generation using Gaussian process regression

Link: https://arxiv.org/abs/2010.02275