

Section Sciences et Ingénierie de l'environnement Design Project 2019 (semestre de printemps)

Proposition n°14

Predict oxygen depletion using Machine Learning

Partenaire externe

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Descriptif du projet

DHI is a global private company whose main aim is to solve some of the main challenges about water environments that our society is facing today.

A part of that aim is fulfilled through modelling aquatic ecosystems. The Inner Danish waters and the Baltic Sea are eutrophied ecosystems, which means that they are prone to oxygen depletion when some environmental conditions occur.

Some parameters that we measure and model, such as salinity and temperature, are representative/proxies of these environmental conditions, that drive the oxygen concentration changes throughout the year. Hence, we want to use our modeled and measured data to predict oxygen depletion events using machine learning.

Objectif et buts

The main objective for this specific study is to explore how machine learning can be used to make prediction on oxygen depletion.

For this, it is important that the students understand all aspects of the problem. The physical and biological processes influencing the oxygen level in some open water environments and estuaries as well as the ecological and social consequences that this phenomenon causes.

It is also important to get familiar with our model, understand what the output are, and how they can be used in machine learning.

The final outcome is expected to be to design one or multiple machine learning setups and present the results with comments (in English).

Descriptif tâches

Conduct a small research on this environmental issue.

Get familiar with machine learning.

Get familiar with the data and start designing some machine learning setup.

Run different scenarios and present results.

Divers

To understand how our model works, it would be nice to have the student come to our main office in Denmark for a day or two.