Thesis Topic: Hydromast fault detection

What's this about?

At the TalTech Centre for Biorobotics, we've built a special sensor called the Hydromast (link). Inspired by how fish sense water movement, it can measure currents and waves in rivers, harbours, and along coastlines. These sensors are already being used in Estonia and abroad.

Figure 1. Hydromast device and an example of debris on the device

The aim of this project is to monitor the Hydromast sensor data for fault detection, for example membrane fatigue and debris obstructing the sensor measurements. The task is to develop a model that is able to detect these events in the measurements. The goal of this work is to increase the quality measurements in long-term data collection campaigns.

What will you learn?

- Time-series modeling & forecasting
- Signal processing, programming in Python
- Critical thinking, analysis skills

Why is this important?

The Hydromast sensor is deployed for longer periods over seasons. As all of the in-situ flow monitoring devices, the Hydromast picks up debris and is prone to biofouling and wear. This work would allow to provide our end-users timely feedback status of the device and cut costs on maintenance.

Requirements: Good command of python and statistics.

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