

Diploma/Master's Thesis

Oxygen Measurements for Apnea Divers

Short Description

Apnea divers are diving up to 100 meters deep which leads to a notable reduction in oxygen saturation. If the oxygen saturation drops below a certain threshold divers may become unconscious. Recently, a measurement device was developed that measures the oxygen saturation by relying on pulse-oximetry, i.e., optical reflective measurements. This opens the door for an early detection of a potential hazardous reductions in the oxygen saturation, enabling the diver to take some counter-measures.

Unfortunately, however, there are many artifacts introduced by the specifics of apnea diving that corrupt the signal. The aim of the thesis is to analyze the signals and enhance them in order to enable reliable measurements. A framework for logging and providing measurement data is available.



Your Tasks

- Signal-analysis: Inspect and analyze the influence of apnea diving on the measurements
- Find and compare suitable algorithms that reduce this influence
- Implement an algorithm that detects a drop off in oxygen saturation

Your Profile

- Motivation and interest in the topic
- Background in signal processing
- Experience in Python or Matlab

Additional Information

This thesis is a cooperation with the University of Split and the University of Östersund. The outcome of this thesis will be used to improve the reliability of detecting changes in the oxygen saturation.

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