Architecting a Low-Cost System for Acoustic Monitoring in Hydroelectric Power Stations

Master's thesis number: 72

Introduction and background:

Acoustic sensors are used to monitor components in hydropower plants. Research and development of new solutions are of interest for plant maintenance, but requires processing of data sampled with a high frequency. Performing necessary transformations and calculations on a device before transmitting data can reduce the cost of operating the monitoring system. Industrial devices for general computation are available for a low investment cost. Additionally, compatible edge frameworks are available.

Problem description and objective:

The goal of the project was to reduce the cost of future acoustic monitoring development. A low-cost solution increases the probability that the system is able to reduce the maintenance cost. It also increases the possibility of starting new projects and verifying methods on multiple plants. The problem was to define a general architecture for industrial PCs, which can be used to interface with acoustic sensors, gather feature rich data and integrate with existing cloud services in a company.

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