Master Thesis Proposal

Title

Predictive maintenance using machine learning on time series data from connected cameras

Category

Computer Science

Scope

2 students completing 30 credits (20 weeks) each.

Background

The number of IoT devices is growing, resulting in an increased demand for maintenance and an opportunity for continuous and automated device health monitoring. Forecasting the need for maintenance is referred to as predictive maintenance and it is a growing application of machine learning (ML). The forecasts are used to increase the efficiency of maintenance work, as well as to reduce downtime of critical equipment.

Axis has extensive time series (TS) data on connected cameras and several metrics that might be indicative of the maintenance need of a camera individual, such as image quality, process specific memory and CPU consumption, as well as the temperature and power consumption of various components. The data is appropriate for multivariate TS forecasting using ML algorithms and for a comparison of shallow ML algorithms with recurrent neural networks.

Goal

The goal of the diploma work is two fold:

1) Quantitatively assess the relevance of the TS data to related predictive maintenance tasks.

2) Explore the achievable accuracy of multivariate forecasting methods using the existing TS data.

More information

Contact

For information or questions regarding technical issues in cases where the description is vague, please contact:

For general or practical questions, please contact our Master Thesis Coordinator: [email address]

Internal information

Host team

Diagnostics and data management

Contact manager

Tory Li

Supervisor(s)

Requirements

Absolute requirements

Knowledge of machine learning and experience in Python.

Appreciated requirements

Experience with time series analysis, forecasting and recurrent neural networks.

Can this thesis be done by only one student?

☐ Yes   ☒ No