Master Thesis – Machine Learning Model Representation and Distribution

Background
Mobile networks are becoming increasingly complex to operate and configure. One way of dealing with this complexity is to apply machine learning techniques for various tasks. The process of collecting data, building machine learning models and using them for predictions and classification requires the normal computer resources cpu, memory and storage. At the same time models are needed in the embedded environment where the mobile network control logic is running, an environment where these resources are scarce. In such scenarios it will be needed to offload the embedded systems and do data collection and model training somewhere else, likely in a cloud environment, and then transfer the models to the embedded systems for later use.

Thesis Description
The following steps are envisioned as part of the thesis work:

- Investigate and compare known techniques for representing and distributing machine learning models for different machine learning techniques like neural networks and tree based decision models.
- If no widely spread or promising techniques are found, propose and prototype a new method.
- Implement at least one of the techniques and measure resource usage when distributing and using the models in an embedded environment.

The thesis will be concluded with a result presentation for the Ericsson development team.

Qualifications
This project aims at students in electrical engineering, computer science, computer engineering or similar. Background in embedded linux is preferred.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2019

Keywords
Machine Learning, Linux, C++, Mobile Telecommunication, Optimization, Linux

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