Göteborg, 2018-06-13

**Volvo Group Trucks Technology**

Master Thesis proposal:

# Learning multi agent reinforcement learning

Reinforcement learning (RL) is an area of machine learning concerned with how software agents ought to take actions in an environment so as to maximize some notion of cumulative reward. The problem is studied in many disciplines, such as game theory, control theory simulation-based optimization and multi-agent systems.
A multi-agent system (MAS) is a computerized system composed of multiple interacting intelligent agents. MAS are applied in the real world to graphical applications such as computer games. They are used for coordinated defense systems, transportation and logistics.
An example of a MAS is controlling spacecraft's. One agent, a ground mission center cannot always react promptly to unexpected events onboard of spacecraft's. Another agent, a space craft, must sometimes be autonomous in making decisions.
At the vehicle automation department, belonging to AB Volvo GTT, numerous projects utilizes a similar setup. Multiple vehicles (spacecraft's) get commands from a central control node (mission center).

 The objective is to learn more about Reinforcement learning applied to multi agent systems.  Primary, problems concerned to make agents act in a cooperative manner, to reach a common goal, is of interest. In a transport system, the interest can be to maximize the amount of moved goods.
The project can/should be divided into: 1) Literature survey. 2) Proposal of example problems. 3) Solution to these problems.

Personal interest in programming and artificial intelligence is seen as benefit. The work will be carried out at Volvo Group Trucks Technology, Vehicle Automation. The thesis is recommended for one or two students with programming profile and good mathematical skills. Thesis start: Autumn 2018.

If you find this proposal interesting, send your application via AB Volvo home page.
www.volvogroup.com/en-en/career

**Contact persons:**
Jonas Hellgren – Volvo GTT
jonas.hellgren@volvo.com