BOMBARDIER

Master's Thesis:

Artificial Intelligence for a better product reliability

Background

Bombardier Transportation is a global mobility solution provider leading the way with the rail industry's broadest portfolio. It covers the full spectrum of solutions, ranging from trains to sub-systems and signalling to complete turnkey transport systems, e-mobility technology and data-driven maintenance services. Combining technology and performance with empathy, Bombardier Transportation continuously breaks new ground in sustainable mobility by providing integrated solutions that create substantial benefits for operators, passengers and the environment.

In Stockholm, we develop Train onboard safety systems and wayside equipment. expectation from these systems are high reliability and high availability. Most of the subsystems are producing log files to be able to analyse their behaviour in case of unexpected result. Many factors can affect the behaviour of a system like the railway, the train model or sometime the human factor or installation deviations. Finding the root cause of any technical issue are often time consuming and require from the engineer a total knowledge of the failing system. With this master-thesis project, we want to explore the possibilities of Artificial intelligence and see if it could help us make our system more reliable by a smarter use of our log files.

Objective

The main objective of the master's thesis is to evaluate the potential of state-of-the-art machine learning algorithms in the detection of deviations and errors in our train control systems and their sub-systems.

The project will consist in the following tasks:

1. Do a technological survey of the available algorithm and identify the ones that are more appropriate in our context: log files from sub-systems used in train control and safety equipment. (research part)
2. Based on the results in part one, choose a sub-system to evaluate and a fitting algorithm and make a working model.
3. Demonstrate and iterate if necessary

Application

The candidate shall have studied information Technology engineering or similar at a Bachelor or Master level. He or she shall have validated some classes related to machine learning and/or Artificial intelligence.
The candidate will be expected to be autonomous.
This master thesis can fit 2 students if the candidates' profiles are relevant.

For more information, contact

Gael Chosson-Almqvist
e-mail: Gael.chosson@rail.bombardier.com