AI applications in railways

Problem description

Within the recently obtained project *Roadmaps for A.I. Integration in the Rail Sector* (*RAILS*, rails-project.eu), we are going to investigate the potential of Artificial Intelligence approaches in the rail railways and contribute to the definition of roadmaps for future research in signalling systems, operational intelligence, and network management. Therefore, we can offer a significant number of great research opportunities.

Possible topics

- AI (e.g. neural networks) for train delay prediction
- AI (e.g. reinforcement learning) for timetable design and real-time traffic management
- Hybrid approaches integrating machine learning and optimization for solving railway problems
- Addressing advantages and limitations of AI-based models
- Analysing and learning behaviour or train dispatchers, train drivers
- Alternative topics proposed by a student may also be considered

Background

A student is expected to develop skills in AI, data analytics, and programming. Background in mathematical optimization programming may be beneficial for some topics. It can be conducted as final thesis project or research project. The research can be preformed within T&P or within a relevant company.

Information

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