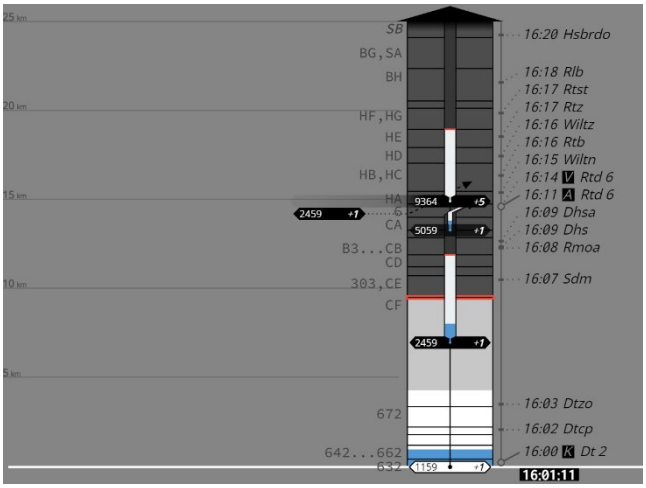

Driver Advisory Systems for merging freight trains

Problem description

In the Netherlands, RouteLint has been implemented since 2017 as an in-cab technology Driver Information System to provide real-time traffic information on the upcoming route and the planned time of arrival at the timetable points ahead (such as stops or junctions). Merging freight trains into a flow of passenger trains is a typical scenario where RouteLint is applied. In practice, not every driver has chosen to use this device, and different drivers have their own driving styles. Therefore, the research questions arise: What are the distributions of merging windows with and without RouteLint, and what are the benefits of using RouteLint? This can be accomplished by performing data analysis.

Assignment

- Review the current literature relevant to Driver Support Systems and data analytics in railways.
- Analyze the distribution of merging windows by using empirical data about track occupations and RouteLint activations.
- Develop a data-driven approach to estimate the train driving behavior and provide timing advice.
- Apply the method to one or more case studies.

Background

A student is expected to have interest and knowledge in data analytics and train operations as provided in the MSc course Railway Operations and Control. You will have an opportunity to further develop skills in railway train operations, data analytics, and mathematical modelling. The research will be performed in the Digital Rail Traffic Lab within T&P at TU Delft and as an intern at the department of Innovation at ProRail.

Reference

- D. Large et al., Train-driving simulator studies: can novice drivers deliver the goods? *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, 231(10):1186-1194, 2017.
- P. Wang et al., A connected driver advisory system framework for merging freight trains. *Transportation Research Part C: Emerging Technologies*, 105, 203-221, 2019.

Information

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