Planning infrastructure maintenance possessions in railway networks

Problem description

A growing transport demand increases the need for the infrastructure maintenance which induces a range of additional planning challenges. Conducting infrastructure maintenance requires multiple possessions (closures during a given period) of open tracks, station tracks, complete stations as well as individual switches. The reduced available capacity often makes the original timetable impossible to operate. The consequence is that adjusted timetables become necessary that do not fully meet customers' requirements generating strong inconvenience to passengers and freight operators and leading to somewhat reduced use of railway services. This project has the objective of developing models and tools to automatically schedule maintenance possessions to create more attractive services during infrastructure works.

Assignment

- Literature study of existing articles
- Data preparation
- Develop a new approach for planning possessions
- Evaluate solutions on passenger convenience and level of service for given maintenance possession schedules
- Write a report and a scientific paper

Background

A student is expected to have knowledge and interest in mathematical optimization, data analysis, and programming. The project builds on recent developments of the Digital Rail Traffic Lab with NS and ProRail. It can be conducted as final thesis project or research project. The research can be preformed within T&P and/or in collaboration with a relevant railway company.

Information

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