**Software Lab:**

(Re-)Design of an Energy Optimisation Tool

**Setting**

The alignment model is the basis for planning a subway tunnel, and in particular, the fundamental source for the energy consumption of trains operated on the resulting track course. Even small changes to the alignment can cause significant changes to this energy consumption, and thus, have a substantial influence on the operational costs. During the last years we developed several tools for a computer supported modelling of the alignment and for the calculation of the resulting energy consumption of a subway train. In particular, these tools allow the real-time recalculation of this information with every single modification of the planner, and finally, provide possibilities for an automatic optimization of a subway track.

**Task**

Redesign these tools and add functionality in order to get a working framework for calculating and optimising a train’s energy consumption. In particular, design a new GUI providing possibility:

- for the visualisation of an alignment model,
- for the modification of an alignment model,
- for the visualisation of the energy consumption,
- for the optimisation of the energy consumption.

Improve the implementation of the (existing) algorithms concerning the optimisation task, or/and improve the possibilities for the modification of the alignment.

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**References**
