Master Thesis

DCC Model: Discretization, Categorization and Characterization Model for the Comprehensive Description of Railway Infrastructure Components and their Interactions

Abstract

Although there is abundant knowledge regarding the railway track system, an accessible and efficient knowledge integrating tool is lacking. This master's thesis aims at developing a model that discretizes, categorizes and characterizes the track system (DCC model), defining the underlying interdependencies between the track components, and creating an accessible application that implements this model. The parameters defining the compatibility among the track components are derived through two approaches; through the formulas from the available literature or through the recommendations of standards and norms based on the previous work of Mrs. Sozan Khalid. Moreover, the model is constructed based on unified modeling language (UML) and can be further expanded. Finally, the user application provides a straightforward tool to design or analyze a proposed track structure and approximate its expected initial costs, and can later on be adapted to determine the track quality for example, and thus, demonstrating one possible advantage of using the DCC model. The DCC model can serve as a knowledge integrating tool within the railway field and could be easily modified to cater for the particularities of other types of track structures.



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DCC Model



Visualization of the DCC Model



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