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in Learning and Industry
(OptALI)

IRSES

Ongoing Deliverable D1.2

Description of Research Seminars

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Participants: UGOE
UNIKL
DTU
UOA
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Research Seminar

offered by Jonas Harbering (University of Göttingen)

in January 2015,

in Christchurch, New Zealand

Subject: Planning the Public Transport from an Optimization Point of View

Problem: Planning the public transport incorporates a broad variety of subproblems some of which are network design, line planning, timetabling, vehicle scheduling, crew scheduling, delay management and others. The planning of the public transport, as highlighted with this list, is usually broken into several subproblems. These subproblems tend to be very hard themselves but have been studied thoroughly in different aspects. The aim of the talk was to introduce and discuss these problems.

Still, by considering these problems the planning of public transport has not ended. This is since the correlation and dependencies between these problems might allow very new insights and margins for improvement. Hence a research line considering how to combine problems within this area was presented. The research line is called integrative public transportation planning. One example on how such research could be conducted was presented. The idea consists in finding a line concept that allow for a high delay resistance.

Main Results: As the talk intended to give an overview on the planning of public transport the results were comprised within the models shown. For example, an algorithm that constructs promising lines for a line pool was discussed. The line pool is a set of possible lines to choose from in the line planning step. The principal ideas of the algorithm and constraints on lines were presented. Similarly, a line planning model minimizing passenger transfers was discussed. As the model minimizes transfers on the stage of line planning the idea is that passengers have

to transfer only few times on average. When considering delays, those passengers, hence, do not tend to carry many delays over from one train to another. Hence, the aim was to develop a model that takes into account delay resistance on the line planning stage already. The main ideas on the model and the implementation were shown and results regarding the delay resistance of different line planning models were compared. Indeed, the model minimizing passenger transfers seems to be the most delay resistant.

Participants: Researchers and students from the University of Canterbury

Publication: