TUM School of Management

Technische Universität München

At the **Chair of Operations Management** at **TUM School of Management** we are looking for interested and qualified students to conduct their

Bachelor's thesis

The topic is:

Implementation of a rolling horizon approach for general resource-constrained project scheduling problems (RCPSP)

Problem description:

The RCPSP is the problem of scheduling a set of activities which have time windows and precedence relations between each other. The objective is to minimize the makespan considering scarce resources. When all activities of a project are known in advance the optimal schedule can be derived. However, in reality activity durations are uncertain during the execution of a schedule. One possibility to overcome this obstacle is to use a rolling horizon framework. In a rolling horizon framework each period, activities are rescheduled such that the makespan is minimized.

The aim of this thesis is to develop and to implement a rolling horizon framework to solve a RCPSP. In order to do so, optimization and simulation software have to be connected.

Tasks:

- Implementation of a RCPCP in CPLEX / Java (or Gurobi / Java)
- Implementation of the rolling horizon planning in AnyLogic
- Simulation and optimization of the RCPSP using AnyLogic

Requirements:

This thesis is suitable for a TUM-BWL undergraduate student whose major is in the Operations and Supply Chain Management. The student must have knowledge in mathematical modelling and programming using IBM CPLEX (or Gurobi) and Java as well as Simulation using AnyLogic.

Begin: as soon as possible

Supervisors: Alexander Döge (alexander.doege@tum.de)
Daniel Gartner (daniel.gartner@tum.de)

Any interested student, please send by email your application together with your curriculum vitae and transcripts of records.