

At the Chair of **Logistics and Supply Chain Management** of TUM School of Management, we are looking for an interested and qualified student to conduct his/her.

Master thesis

on the topic

Data-driven Optimization in Transportation with Disruption Risks

The advent of e-commerce has not only accelerated the demand for efficient and reliable transportation but also heightened the expectations for timely delivery services. Businesses increasingly recognize the paramount importance of enhanced delivery performance within logistics chains as a critical factor for overall success. However, the recent disruptive events, such as the crisis in the Red Sea and the congestion in the Panama Canal, have highlighted the susceptibility and vulnerability of transportation networks within global supply chains. Traditional approaches to these problems have often relied on stochastic optimization methods. However, the “Big Data” in e-commerce presents a unique opportunity to tackle these stochastic models without the necessity of explicitly modeling uncertainty distributions. This thesis seeks to address these challenges by leveraging data-driven optimization methods, with a particular emphasis on disruption risks.

Key project tasks:

- Literature review on relevant fields of study.
- Mathematical modeling addressing the research question.
- Implementation of the model and systematic analysis of the model performance.
- Analysis of results and implications.

Requirements:

The thesis is suitable for Master in Management and Technology students with a major in operations and supply chain management. The ability to work independently, as well as analytical skills, are required. Knowledge of one general-purpose programming language (e.g., Python, C++, or others) is required. Knowledge of mathematical programming and optimization is preferred.

Earliest begin: April 2024

Supervisor: Kai Zhu

Application: Email with curriculum vitae and transcript of records to logtheses.log@mgt.tum.de