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

Bachelor thesis

on the topic

Design and Optimization of a Two-Echelon Vehicle Routing Problem for Sustainable Urban Delivery in Munich Using Micro-Depots

As cities face increasing pressure from e-commerce growth, traffic congestion, and environmental regulations, new models for last-mile delivery are gaining importance. One such model is the Two-Echelon Vehicle Routing Problem (2E-VRP), where goods are first delivered to urban micro-depots and then distributed to customers using smaller, low-emission vehicles.

This thesis investigates the potential for such a system in Munich. The focus is on collecting and analyzing urban data, such as customer density, traffic zones, and land use, and studying relevant local regulations to identify feasible micro-depot locations and design a practical two-echelon delivery framework. The thesis emphasizes real-world planning, sustainability, and regulatory feasibility.

The goal of this thesis is to assess how a two-echelon delivery system can be realistically implemented in Munich, based on spatial, logistical, and legal constraints.

Key project tasks:

- Literature review on relevant fields of study
- Collect and analyze geographic and demographic data relevant to Munich's urban structure
- Review of local regulations affecting delivery operations, depot placement, and vehicle types
- Development of a conceptual delivery framework tailored to the Munich context

Requirements:

The thesis is suitable for Bachelor in Management and Technology students with a focus on 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, Julia, C++) is a plus. Knowledge of mathematical programming and optimization is preferred.

Earliest begin: As soon as possible

Supervisor: Nicolas Kuttruff

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