Designing Fixed Delivery Areas for the Multi-Depot Vehicle Routing Problem

For planning delivery tours from multiple depots, a common approach is to decompose the problem by depots. In the first step, customer regions are assigned to the depots and then the tours of each depot are optimized. Often, the delivery areas are designed in a way in that allocates customers to the geographically closest depot. However, this might not necessarily be the optimal allocation.

Aim of this thesis is to develop an approach that helps to design optimal fixed delivery regions for the multi-depot vehicle routing problem where the exact customer locations are stochastic. This should be supported by a concise overview on relevant academic literature and appropriate computational experiments.

The student should have solid background in mathematical modelling and optimization and might require some programming skills for the implementation.