Pickup and delivery optimization at CQM, Eindhoven

The pickup and delivery problem with time windows is a combinatorial problem similar to the vehicle routing problem where you need to deliver packages to various locations from a certain depot. However, in this problem you do not only need to deliver to specific locations, but also pick up the requests at certain locations. Furthermore, each action of pickup or delivery has to happen within a certain time window.

The problem at hand is challenging and ever more important with more demanding problems arising from, for example, deliveries from online web shops. CQM is leading in state-of-the-art optimization algorithms that are tailored for particular business problems. Recently we have developed a cutting edge optimization algorithm that is applied to a large scale pickup and delivery problem (PDPTW) for one of our clients. In a direct optimization challenge we improved, with an order of magnitude, over existing solution methods provided by our competitors.

Assignment:

We would like to take on the world records for PDPTW on the benchmark instances given by https://www.sintef.no/projectweb/top/pdptw/li-lim-benchmark/, building on our current optimization algorithm. Especially for the larger, more interesting, instances we believe we can improve the current best known solutions.

During this assignment you will have the opportunity to work with high quality coding and algorithms. It therefore requires coding in C++ (but building on existing code), an affinity with optimization algorithms and an interest in consulting. Throughout the project one of our colleagues, that is actively working with the optimization software, will assist you. The duration of the project is 3 months.

About CQM:

CQM helps organizations make complex processes transparent. Using predictive to prescriptive analysis, we create the framework to analyze processes and make decisions based on facts. We are strong in optimizing planning and logistics and improve product and process innovation. We develop intelligence that brings organizations to the next level on a structural basis.

We work in a stimulating environment where you can learn from software engineers, algorithm experts and consultants during the project. You will be offered an internship fee for the whole duration of the project.

Profile of student: MSc student computer science with good software skills and affinity for optimization algorithms and/or consulting.

Duration: Three months.

Contact:
If you have any questions about the project or CQM, do not hesitate to contact us:
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