

## **Long Short Term Memory (LSTM) Neural Network based meta-heuristic for Dynamic Car-Passenger matching problem in Ride Hailing Services**

We are offering an interesting Master's Thesis in our team for solving the discrete optimization of matching vehicles to passenger requests using LSTM networks. The problem consists of matching vehicles to customer requests such that various goals are minimized. The thesis is continuation of previous work where we focused on the static problem, where all the customer requests and vehicles are known in advance. Therefore, the current work will focus on the dynamic aspect of the problem, where new requests are added dynamically to the system. The thesis aim at using LSTM to aid the Large Neighborhood Search algorithm for finding the global optimal solution. The basic work involves programming in Python, and a small portion may also be in Java. The thesis will be at BMW (Garching).

Following are the requirements for a suitable candidate.

- A bachelor university degree in computer science, informatics, robotics, mathematics, physics, electrical engineering or a related field.
- In-depth knowledge of Neural Networks, especially LSTM. Furthermore, a basic understanding of analyzing implementing and evaluating performance of various optimization algorithm.
- In-depth experience with Python and Java (optional).
- In-depth experience of data visualization with Python.
- Practical knowledge of agile software development and object-oriented software design principles.
- Business-fluent English or German

Interested candidates forward their resume, short motivation letter and possible start time to the following email address: ***arслан-ali.syed@bmw.de***