Simulation-based Optimisation Engine for High-Performance Computing Environments

TUM CREATE

About TUM CREATE
TUM CREATE is a joint research programme between Technische Universität München (TUM) in Germany and Nanyang Technological University (NTU) in Singapore with funding by the National Research Foundation of Singapore. It is investigating innovative technologies, future transportation concepts and the application of electric vehicles (EVs) to match the challenging requirements of fast-growing tropical megacities. This is a highly interdisciplinary international research effort, combining expertise from several institutes from TUM and NTU.

Project Description
TUM CREATE is developing a simulation framework for multi-scale agent-based traffic simulation, integrating various simulation models (e.g., infrastructure models, vehicle models, driver behaviour models, etc…) to conduct large-scale exploratory simulation experiments. Among other purposes, this simulation framework will be used for simulation-based optimisation where a search heuristic (e.g., evolutionary algorithm) is exploring a search space with the goal to find an optimal solution to a problem. Exploration does involve the execution of simulations. In this project, the aim is to develop an optimisation engine based on evolutionary computing methods for high-performance computing environments. For this purpose, TUM CREATE is looking for a Bachelor student with strong software engineering background who is interested in working with high-performance computing environments and large-scale agent-based simulation in a highly multi-disciplinary working environment.

The position is available immediately. Applicants* should send a CV and covering letter by email to Dr. Heiko Aydt (heiko.aydt@tum-create.edu.sg).

*Singaporean/PR applicants are preferred.

Requirements:
- Undergraduate student in Computer Science (preferably with focus on Software Engineering)
- High standard of English (written and spoken)
- Good programming skills in Java are required
- Prior experience with high-performance computing is beneficial
- Knowledge of optimization and search heuristics (in particular, evolutionary algorithms) highly beneficial