

Master Thesis – Start-up Track

SECOR - Smart Automotive Semiconductors Exchange Platform

Assessing the potential of Data Analytics and AI for identifying opportunities to exchange semiconductor order volumes between market actors to increase vehicle production volumes.



Image: TUM

Project-/Topic description

The SECOR Initiative

The role of semiconductors in the global automotive industry continues to grow rapidly and so does the amount of chips on offer. This implies an ever-increasing complexity for electronic unit designers to select the most appropriate chip for a specific project.

SECOR is a fresh startup, initiated by a group of senior executives from the automotive and electronics industry. It's first priority is to address the regular chip shortage situations in the automotive supply chain, based on a methodology and platform to exchange scarce chips between market actors, as a neutral and transparent service provider. SECOR is looking for a Master Student to contribute to the design of suitable data analytics and AI algorithms to identify the most optimal exchange of chip order volumes, that maximizes to overall vehicle production capabilities of participating OEMs. A future role within the young company would be strongly welcomed.

Focus of work

The following areas of work are envisaged:

1. Finetune and validate the SECOR data structure for capturing all relevant input data from participating market actors.
2. Design algorithms / AI approaches to find the most optimal exchange of semiconductor order volumes between market players.
3. Demonstrate and validate the effectiveness of these algorithms / AI approaches on concrete use cases (provided by SECOR).
4. Recommend optimisation projects to further improve the performance of the SECOR approach.

Requirements

- Current enrolment in a master's degree program at TUM, e.g. Electrical Engineering and Information Technology, Data Engineering and Analytics, or Automotive Engineering with strong affinity to databases and AI, as well as an understanding of semiconductors and electronics design.
- Fulfilment of all pre-requirements for registration of a master thesis
- Interested in and ideally exposure to automotive electronics industry and/or supply chain topics
- Strong motivation and independent, entrepreneurial working style
- Close collaboration with the founders of SECOR
- Interested in joining SECOR, after finalising the Master project
- Practical experience with data analysis, data bases, data science, optimisation algorithms (e.g. gaming theory) and AI concepts

What we offer

- Participation in the TUM Entrepreneurial Masterclass (separate application process required) and application-oriented Master thesis with real value add to the global automotive industry
- Close cooperation with the founders of SECOR, highly experienced and networked in the global automotive world
- Opportunity to join a start-up with high potential to scale fast and become a global category leader
- Change to work as part of a highly motivated team, which considers a pleasant and open team spirit as most important success factor

