



Infineon Technologies AG and **Karlsruhe Institute of Technology** are looking for interested and qualified students to conduct their

Internship

on the topic

Mathematical modelling of a semiconductor supply chain

Description:

An accurate mathematical model of a semiconductor supply chain and subsequent applications of methods from the field of operations research can lead to significant gains in efficiency and profitability. By understanding supply chain dependencies, businesses can optimize production, inventory management, and distribution. This leads to better cost management, improved service levels, and increased customer satisfaction. Additionally, supply chain modeling can help businesses identify and mitigate potential risks, resulting in a more robust and reliable supply chain.

Infineon Technologies AG develops semiconductors and systems for automotive, industrial and multimarket sectors, chip card, and security products. The products are developed to make life easier, safer and greener with technology that achieves more, consumes less, and is accessible to everyone.

The intern will conduct a thorough examination of the supply chain management process, with a focus on tasks connected to the allocation of production capacities to external/internal demand. Subsequently, the intern will work towards setting up accurate mathematical models of critical parts of these processes supply chain which may serve as the input to state-of-the art optimization engines as well as potentially methods from the field of quantum computation.

Modelling of capacity allocation tasks

- Gain an understanding of existing supply chain procedures and identify areas for improvement.
- Identify critical junctures in the supply chain orchestration process and collect all available information on these problem areas.
- Analyze available supply chain modeling tools/techniques and develop an accurate mathematical model for the problem area
- Possibly conduct first tests on the model using state-of-the art optimizers.

Requirements:

The internship is suitable for students with a major in the area of operations research, process management and/or supply chain management. Candidates are expected to have a strong analytical background and an interest in thinking mathematically. Furthermore, candidates must be able to work independently and reliably. Proficiency in MS-Office tools (Word, Excel, PowerPoint), along with proficient English communication and presentation skills, are an essential prerequisite. Programming experiences are very helpful.

During the internship, a contract with Infineon Technologies is provided.

Begin: From February/March 2025

Mentor (Infineon): Hans Ehm (Supply Chain Innovation)

Mentor (KIT): Hannah Bakker/Stefan Nickel (Institut für Operations Research)

Any interested student, please send by email your application together with your curriculum vitae and transcripts of records to **Hans Ehm** (Hans.Ehm@infineon.com)