Internship / Master Thesis

Capacity-Demand Matching Optimization in the Semiconductor Industry

Description:

Capacity-Demand Matching is crucial for Semiconductor Supply Chains. Yet, it is very complex due to very high number of orders, fast-changing demand, a complex manufacturing process in a global production network and moving bottleneck capacities of the production facilities. Due to the high amount of details, the process needed to be separated in two subprocesses to enable a daily optimization: Those two processes are: A) The generation of the ATP (Available to Promise) and B) (re)confirming the orders to this ATP. Optimizing those algorithms should lead to an increased use of physically available flexibilities and thus improves capacity utilization and customer deliveries. The optimization by itself is an academic operations research problem requiring domain knowledge (e.g. from Infineon) and consultancy methodologies (e.g. from Basycon)

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.

Basycon Unternehmensberatung GmbH is a management consultancy operating at the intersection of business and IT, combining the professionalism of traditional management consulting with deep IT expertise. Built on extensive experience in large-scale IT and organizational projects.

You will research state-of-the-art optimization techniques to reduce the computational cost of the problem, potentially combining the subproblems into one efficient optimization or designing clever coordination mechanisms. You will:

- Perform an analysis of the current techniques for Capacity-Demand Matching.
- Develop possible alternative optimization approaches.
- Collaborate with cross-functional teams to ensure the successful completion.

Internships and theses are suitable for Management & Technology with a major in Operations and Supply Chain Management. Candidates should have a strong analytical background, be able to work independently and be reliable. Proficiency in MS-Office tools (Word, Excel, PowerPoint), along with proficient English communication, presentation skills and an interest in mathematical modeling and solvers, are important.

During the internships and thesis, contracts with Infineon Technologies and/or Basycon will be provided.

Begin: about May, 2024
Advisor (TUM): tbd
Mentor (Infineon): Hans Ehm
Mentor (Basycon): Dr. Tobias Weisrock

Please send your application together with your curriculum vitae and transcripts to logtheses.log@mgt.tum.de and Hans Ehm (Hans.Ehm@Infineon.com)