

Sooraj Sunil

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EDUCATION

- Oct 2022 - Present** **Master of Science - MSc. Systems Engineering for Manufacturing** (Grade: 1,8)
Otto-von-Guericke University Magdeburg, Germany
Majors: Factory Automation and Industrial Robotics, Advanced Application of Industry 4.0, Systems Engineering for Manufacturing, Modelling & Simulation in Logistics Planning.
Academic Projects:
- Establishing Digital Engineering Chains using **MBSE**: Steel production plant.
 - Production planning Optimization using Siemens Technomatix Plant Simulation.
- Jul 2015 - Jul 2019** **Bachelor of Technology - Mechanical Engineering** (Grade: 2,2)
Government Engineering College Thrissur, India

PROFESSIONAL EXPERIENCE

- Oct 2025 - Present** **Bosch Rexroth AG**
Master Thesis
Stuttgart, Baden-Württemberg, Germany
Topic: Evaluation of EPLAN generation in a digital engineering tool chain for mechatronic components of transport systems
- Conceptual development of an **AutomationML-based engineering data logistics** to integrate EPLAN generation from simulation models using a Common Data Model.
 - Enriched Transfer System 2 (TS2) simulation objects with electrical metadata, developed a Visual Components Python add-on to export information model in a structured JSON/XML.
 - Developed AML foundation for data mapping by creating System Unit Classes in **Enterprise Architect** using DIAMOND Common Concept modeling for AML generation.
- Mar 2025 - Sep 2025** **Bosch Rexroth AG**
Werkstudent: Simulation in Customer Business Factory Automation
Stuttgart, Baden-Württemberg, Germany
- Conceived and evaluated configurable **PLC function blocks** for TS2 control, implemented and validated a **ctrlX-based Virtual Commissioning** simulation demonstrator model.
 - Drafting of a technical specification for a standardized component library for platform independent **Virtual Commissioning** of the Transfer System TS2.
 - Development of a simulation model for an Active Shuttle customer project to evaluate, optimize cycle time and assess the Autonomous Mobile Robot technical configuration.
 - Defined technical requirements and implemented library for VarioFlow belt, TS1Evo.
- Sep 2024 - Feb 2025** **Bosch Rexroth AG**
Intern: Simulation in Customer Business Factory Automation
Stuttgart, Baden-Württemberg, Germany
- Creation, execution, and documentation of software tests for simulation libraries: Transfer System TS1, TS2, TS5 and VarioFlow plus following the **V-model** framework.
 - Development and implementation of library components for VarioFlow belt and TS1.
 - Design and documentation of demonstrator / training models for **ctrlX-based Virtual Commissioning** of technical systems in Visual Components.
 - Implemented a proof of concept for operational virtual commissioning of TS2, including evaluation of signal models and process logic and integration of **PLC function blocks**.

- Oct 2023 - Feb 2024** **Otto-von-Guericke University Magdeburg**
Tutor - Material Handling Systems
- Conducting ASRS experiments, Course content preparation, Academic advising.
- July 2022 - Sep 2022** **Nitta Gelatin India Limited (NGIL)**
Senior Engineer (Collagen Peptide Expansion Projects)
Cochin, India
- Collaborated with Industrial engineering design team iteratively to optimize plant layout and production line design, Piping and Instrumentation diagram.
 - Procured technical and budgetary offers for respective equipment required for the new plant from various vendors.
 - Prepared **PLC program** control logic for automation of the production operations.
- Sep 2019 - Jun 2022** **Nitta Gelatin India Limited (NGIL)**
Senior Engineer (Peptide Production Plant)
Cochin, India
- Coordinated **Cross functional teams** for process automation and optimization resulting in 30% daily production increase.
 - Implemented Lean principles like 5S in and around the production plant.
 - Maintaining Standard Operating Procedures (SOPs), ISO standard documents.

PROJECTS

- Apr 2024 - May 2024** **Discrete-Rate and Discrete-Event Simulation Modelling in Production planning**
- Modeled an entire cookie production process in ExtendSim using DRS and DES, identified bottlenecks, estimated production capacity with validation using rough calculations.
- Apr 2024 - May 2024** **Production Planning Optimization with DES and Genetic Algorithms (GA)**
- Developed a Plant Simulation model and applied GA to optimize sequencing and lot sizing, reducing makespan and total tardiness and achieving up to 30% efficiency improvement.
- Oct 2023 - Feb 2024** **Establishing Digital Engineering Chains using Digital Twin: Steel production plant**
- Applied **Model Based Systems Engineering (MBSE)** to implement engineering data logistics across engineering disciplines; generated a global AutomationML DSL and generated AAS for Digital Twin realization.

LANGUAGE PROFICIENCY

English: Fluent **German:** Good Knowledge **Malayalam:** Mother tongue

SKILLS

Simulation : Visual Components, Plant Simulation, ExtendSim10
Programming : Git, Python, SimTalk, C++, JSON, XML, Streamlit
Control & Automation : **CODESYS, PLC programming (ST), ctrlX WORKS**, OPC-UA, Virtual Commissioning
Systems Engineering : **Enterprise Architect, MBSE, SysML**, AutomationML, Digital Twin
Agile Methodologies : Azure DevOps, Jira, Kanban, Lean principles (5S, Kaizen, JIT, TPM, Gemba)
Data Analysis : MS Office, Power BI
CAD & CAE : EPLAN Electric P8, MTPRO, Solidworks, Siemens NX, Altair Inspire, Prusa Slicer
Other : Six Sigma, SAP

REFERENCE

Mr. Richard Verbeet : System Architect | Engineering Solutions & Projects (DC-AT/ESP1) | Bosch Rexroth AG
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