Sagni Majumdar

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Summary

Doctoral Candidate at Lehrstuhl für Fertigungsautomatisierung und Produktionssystematik, FAU Erlangen-Nürnberg, specializing in 3D high-frequency mechatronic devices. Completed MSc in AI with a thesis on emotion-aware social robots for elderly care. Passionate about advancing tactile sensing in robotics through 3D printed skin. Backed by a Mechanical Engineering background and 3 years of experience as a Senior Production Engineer at TVS Motor Company, with strong technical and collaborative skills. Eager to contribute to innovative and socially impactful projects.

Education

Doctoral Candidate April 2025 – Present
Lehrstuhl für Fertigungsautomatisierung und Produktionssystematik, FAU Erlangen-Nürnberg *Erlangen, Germany*

Master of Science in Artificial Intelligence Oct 2021 – March 2025
FAU Erlangen-Nürnberg *Erlangen, Germany*

Bachelor of Technology (B-Tech) in Mechanical Engineering Jul 2014 – Jul 2018
Kalinga Institute of Industrial Technology *India*

Experience

Werkstudent – Agile and Portfolio Management Jun 2023 – Mar 2025
Siemens Healthineers *Erlangen, Germany*

- Developed Power BI dashboards and Azure-based tools to support Lean Portfolio Management and system migration.
- Created roadmap templates, wiki documentation, and user surveys to enhance platform transparency and performance tracking.
- Recognized for strong analytical skills, fast learning, and delivering practical solutions with high reliability and independence.

Research Assistant, Chair of Computer Science Nov 2021 – March 2025
Friedrich-Alexander-Universität Erlangen-Nürnberg *Erlangen, Germany*

- Creating and editing charts (pie, column, etc.) for the application trend in MSc. Computational Engineering using MS Office, Word, Excel, and Teams.
- Editing and modifying FAU course webpages using university internal tools.

Senior Engineer Jul 2018 – Jul 2021
TVS Motor Company *India*

- Electronic Control Unit (ECU) Flashing, End-Of Line Diagnostics development support and testing for different variants of three-wheeled vehicles.
- Sensor selection for Automated Guided Vehicles.
- Digital Twin Creation and Multi-Model Process planning using DELMIA tool (powered by Dassault Systems).

Intern May 2017 – Jul 2017
TVS Motor Company *India*

- Root cause analysis for variant mix-ups in the multi-model engine assembly.
- Designing Poka-Yoke (mistake proofing) system for critical mix-ups using computer vision.

Project Intern May 2016 – Jun 2016
Jadavpur University *India*

- Developed a prediction system to predict temperatures at different nodes of a steel-rod for different conditions of heat transfer using C-programming.
- Physical validation when the steel-rod was subjected to different modes of heating (Conduction, Convection, and Radiation) and validation using Matlab.

Master Thesis

Emotion-Aware Social Robots for Elderly Care Ongoing
Friedrich-Alexander-Universität Erlangen-Nürnberg

- Developed a layered ROS2-based architecture for real-time facial emotion recognition using SHORE by Fraunhofer.
- Implemented prioritization, deliberative (HMM-based), and reactive override systems to handle multi-user and emergency scenarios.
- Enabled LED-based emotion feedback via Blender simulation, enhancing interaction in elderly care settings.

Publications

Impingement Cooling of Heated Steel Specimen Using Nano-Fluids: An Experimental Investigation, presented at the International Conference on Advances in Mechanical and Industrial Engineering (ICAMIE - 2020) and published in *Advances in Mechanical and Industrial Engineering*, Taylor and Francis Group Journal.

Projects

Simulating Cerebellar Motor Learning During Gait Using Incremental Learning
Friedrich-Alexander-Universität Erlangen-Nürnberg
Simulated step-length adaptation using motion capture data and a cerebellar-inspired incremental learning model.

Simulating Gait Using an Energy-Neutral Numerical Method
Friedrich-Alexander-Universität Erlangen-Nürnberg
Compared numerical methods for simulating a musculoskeletal gait model while preserving energy neutrality.

Correlation Between Accident Rates in Germany and Münster with Respect to Bicycle Count in Münster
Friedrich-Alexander-Universität Erlangen-Nürnberg
Analyzed traffic and bicycle usage data (2018–2021) to uncover inverse trends between accidents and bicycle count.

Impingement Cooling of Heated Steel Specimen Using Nano-Fluids: An Experimental Investigation
Kalinga Institute of Industrial Technology
Designed and evaluated nanofluid cooling systems to enhance thermal performance and machining productivity.

Skills

Programming Languages: Python, MATLAB, C++

Frameworks: PyTorch, ROS2

Technologies: Deep Learning, Machine Learning, Data Analysis, Signal Processing, PowerBI, Microsoft Azure

Communication Skills

- Core Team Member and Indian Classical Dancer (Kuchipudi) at Kuchipudi Kalamadhuri.
- Volunteer with the educational non-governmental organization (NGO) ”Donate an Hour”.
- Participated as an active member in Toastmaster club, Hosur (2018-2021).

Languages

- English: Full Professional Proficiency
- German: Basic Proficiency
- Bengali: Native or Bilingual Proficiency