ARPAN BISWAS

Electrical Engineer

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Allmandring 12D-2, 70569, Stuttgart, Germany

Nationality: Indian **Date of Birth:** 03.08.1999

WORK EXPERIENCE

01/2024 – Current **Werkstudent - AI Model Development**
JDM Innovation GmbH, Murr, Baden-Württemberg, Germany
- Developing anomaly detection and a model for automated medicine dispensers to detect and pre-cut medical pouches, ensuring easy opening and efficient processing.

07/2022 – 08/2023 **Werkstudent – Device Interface Programming and Automation**
Robert BOSCH GmbH, Schwieberdingen, Baden-Württemberg, Germany
- Developed Python-based GUI for efficient instrument control with TCP/IP interfacing.
- Automated ECU testing, CANoe control, and ECU flashing.
- Conducted high-voltage lab operations and algorithm development for thermal cameras.

08/2020 – 09/2020 **Internship - Battery Management System**
Trueno, Mumbai, Maharashtra, India
- Designed custom Passive Battery Management System with LTC6804-2 IC and ATmega328p Master IC, implementing Coulomb Counting for SoC estimation.

THESIS

12/2023 – Current **Master Thesis (Masterarbeit)**
Experimental and model-based investigation of solid-state diffusion in Na-ion cells
Fachgebiet Elektrische Energiespeichersysteme, Institut fur Photovoltaik, Stuttgart, Germany
- Comparing a novel Galvanostatic Intermittent Titration Technique (GITT) that includes relaxation phases to improve solid-state diffusion analysis, against conventional methods.
- Performing experimental characterization on Na-ion full and half coin cells and developing a PyBaMM-based half-cell model using grid search and genetic algorithm-based optimization.

01/2023 – 07/2023 **Research Thesis (Forschungsarbeit)**
Automated Extraction of TFT Parameters for Simulation
Institut für Großflächige Mikroelektronik, Stuttgart, Germany
- Fabricated IGZO Thin Film Transistors in a clean room, developed an automated TFT parameter extraction tool using iterative simulations and genetic algorithm based optimization.

EDUCATION

10/2021 – Current **Master of Science in Electrical Engineering (Smart Systems)**
Universität Stuttgart, Stuttgart, Germany
Grade: 2.23*/1.0 (On-going)

08/2017 – 07/2021 **Bachelor of Technology in Electronics Engineering**
K.J. Somaiya College of Engineering, Mumbai, India
Grade: 8.15/10

SKILLS

Programming Languages: Python, C++, MATLAB/Simulink, ECU-Test, LabVIEW, Git, CAPL
Software Tools: Microsoft Office, Altium Designer, KiCAD, EAGLE, LTSpice, LaTeX, STM32Programmer, CANoe, Pytorch, PyBaMM, impedance.py
Battery Technology: Lithium-ion Batteries, Sodium-ion Batteries, Electrical and Electrochemical Characterization Techniques (GITT, EIS), Battery Modelling
Other Skills: Circuit Design, Electric Vehicle, Laboratory Measurement and Testing, Automation Test Bench, Optimization Algorithms, Neural Networks

LANGUAGE SKILLS

English: Business fluent (C1), **German:** Basic user (A2), **Hindi:** Native

EXTRACURRICULARS AND PROJECTS

12/2023 – 01/2024 **Battery State of Charge Estimation** **Github Link**
Developed a machine learning-based tool for LG HG2 lithium-ion battery SoC estimation, utilizing FCN, CNN, and LSTM models to improve accuracy and reliability in battery management.

10/2021 – 09/2022 **Driver Interface | Subteam System Electronics**
GreenTeam Uni Stuttgart e.V. (Formula Student Electric)
Developed Dashboard and Steering Wheel circuit boards using STM32, featuring CAN and Ethernet. Enhanced user experience with TouchGFX-based GUI.

11/2017 – 07/2021 **Electrical Lead and E-Powertrain Engineer**
Orion Racing India (Formula Student Electric)
Led electrical component and powertrain development for a Formula Student Electric race car, including PMSM motor simulation and dynamometer validation; designed Vehicle Control Unit and Data Acquisition System using LabVIEW, MATLAB, and NI myRIO-1900.

PUBLICATIONS

2022 **Modeling and Simulation of Launch Control System for Formula Student Electric Vehicle**
IEEE International Transportation Electrification Conference (ITEC)
This paper introduces an optimal slip control strategy for electric cars, specifically designed for a Formula Student vehicle. Simulated the impact of this control on lap times during a straight-line acceleration event using MATLAB/Simulink and IPG CarMaker software. DOI: 10.1109/ITEC-India53713.2021.9932532