Priyabrata Mondal

Senior Software Engineer
M.Tech - Electric Transportation
Indian Institute Of Technology, Mandi

+91-7318601195
priyabratamondal622@gmail.com
GitHub
linkedin.com/in/priyabrata-mondal-64a555206

Education

Degree	Institute/Board	CGPA/Percentage	Year
Master of Technology	Indian Institute of Technology, Mandi	8.59/10	2022-2024
Bachelor of Technology	Maulana Abul Kalam Azad University of Technology, West Bengal	8.98/10	2018-2022
Senior Secondary	West Bengal Council of Higher Secondary Education	86.8%	2018
Secondary	West Bengal Council of Higher Secondary Education	91.57%	2016

Work Experience

- **KPIT TECHNOLOGIES** *Jul 2024 – Present*
  Senior Software Engineer Pune, Maharashtra
  - Contributing to a client project focused on **memory management for Virtual ECUs (vECUs)** exported using **FMI 3.0 standards**.
  - Developing and integrating **modular C++ components** within MATLAB Simulink models, following **SOLID principles** and clean architectural practices to enhance maintainability and code scalability.
  - Optimizing memory utilization by handling complex data structures such as **curves, maps, 1D/2D arrays**, ensuring correct **memory alignment, orientation, and data padding** for high-performance simulations.
  - Performing rigorous **Model-in-the-Loop (MIL)** and **Software-in-the-Loop (SIL)** validation, comparing outputs, analyzing deviations, and ensuring functional equivalence between model behavior and generated C++ code.
  - Utilizing **Windows API** for dynamic loading and interaction with **DLLs** associated with FMUs/vECUs, ensuring seamless integration and runtime adaptability.
  - Implementing diagnostic routines to **monitor, log, and report fault events**, interfacing with the **Diagnostic Event Manager (DEM)** for real-time error detection during simulations.
  - Improving system robustness by designing **loosely coupled, reusable modules**, enabling easier unit testing, faster debugging, and increased reliability across simulation variants.
- **KPIT TECHNOLOGIES** *Aug 2023 - Jun 2024*
  Embedded Systems Intern Pune, Maharashtra
  - Contributed to the **modeling of an Ethernet Controller** as an **FMI (Functional Mock-up Interface)** component to enable cross-platform simulation and integration.
  - Performed an in-depth **comparative study between SystemC and TLM (Transaction-Level Modeling)** approaches to evaluate performance, modularity, and reusability.
  - Integrated the Ethernet Controller model with **Vector SilKit**, an open-source co-simulation framework developed by MIT, for **Software-in-the-Loop (SiL)** testing.
  - Gained hands-on experience with **C++, SystemC, TCP/IP socket programming**, and networking concepts essential for high-performance simulation environments.

Projects

- **Reliability Analysis of GaN-Based Power Converter for EV Charging Using Deep Learning** *July 2023 - May 2024, IIT Mandi*
  Guide: Dr. Moumita Das
  - Developed a **GaN-LSTM-based deep learning framework** to enhance the **reliability analysis of Gallium Nitride (GaN) power converters** used in **EV charging systems**.
  - Collected training data through **Double Pulse Test (DPT)** simulations to model the dynamic behavior and switching characteristics of GaN devices.
  - Designed and trained an **LSTM (Long Short-Term Memory)** neural network to accurately predict GaN switch reliability under various load and thermal conditions.
  - Achieved faster and more precise analysis compared to traditional methods, contributing to **optimized EV charging infrastructure** through predictive insights.

Technical Skills

- **Programming Languages**: Python, C, C++, MATLAB, SystemC
- **Frameworks / Libraries**: TensorFlow, scikit-learn, NumPy, Pandas, Node.js, React
- **Software / Tools**: GitHub, GitLab, REST APIs, Google Colab, Visual Studio, Simulink, Stateflow

Publications

P. Mondal, S. Saha and M. Das, "**GaN Device Modelling Using Machine Learning Approach for Power Electronic Converters**," 2024 IEEE International Communications Energy Conference (INTELEC), Bengaluru, India, 2024, pp. 1-5. [IEEE Paper Link]

Achievements & Awards

- Solved **500**+ problems on **GeeksforGeeks**.
- **5 star** rating in Problem Solving on **HackerRank**.
- Secured **AIR 2851** out of 69,734 candidates in **GATE (EE)**, 2022.
- Selected for **Siemens Scholarship Program** among 2100+ students across India.