DEBMALYA SUR

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EDUCATIONAL QUALIFICATIONS

Indian Institute of Technology, Dhanbad (IIT Dhanbad)
Master of Technology in Computer Science and Engineering | CGPA : 9.26 — 2022 – 2024

Government College of Engineering & Ceramic Technology, Kolkata
Bachelor of Technology in Computer Science and Engineering | CGPA : 9.87 — 2018 – 2022

Bhatpara Amar Krishna Pathsala, Bhatpara
Class XII (WBCHSE) (2017 - 2018) | Percentage: 92.4% — Class X (WBBSE) (2015 - 2016) | Percentage: 93%

SKILLS

Technical Expertise Python, Machine Learning, Deep Learning, NLP, LLMs, Computer Vision, Prompt Engineering, Agentic Workflows

Proficient Tools Flask, SQL, SQLite3, Firebase, MongoDB, AWS, HTML, Bootstrap, Tailwind CSS, Redis

PROFESSIONAL EXPERIENCE

Senior Engineer @ Samsung Research Institute Bangalore (SRIB) — **July 2024 – Present**

- Developing computer vision-based enhancements to improve Samsung's user interface and overall user experience.
- Analyzing large-scale datasets and performing advanced data extraction and visualization to derive actionable insights.
- Optimizing deep learning models for on-device deployment, ensuring efficiency, scalability, and low latency.
- Collaborating across cross-functional teams to ensure timely and efficient project delivery.

Research Intern @ Samsung Research Institute Bangalore (SRIB) — **June 2023 – Aug 2023**
Collaborated with the On-Device AI team to optimize render thread performance by reducing latency and improving device responsiveness. Designed and implemented a Huffman Encoding-based texture optimization algorithm, achieving a compression ratio of up to 93%.

TECHNICAL PROJECTS

Smart Attendance System with Proxy Detection: Designed an IoT-enabled attendance management system leveraging machine learning and computer vision to automate attendance tracking and detect proxy attendance. Implemented backend integration using Python and Google Drive API.

Baud News: Developed a personalized web-based news aggregation platform delivering real-time content tailored to user preferences. Implemented scheduled updates using Cron jobs and utilized Flask, Redis, Firebase, and Bootstrap for development.

RESEARCH WORK

Clustered Federated Learning Approach for Non-Independent and Identically Distributed (Non-IID) Data (Published in *SSRN Papers*)
Proposed a scalable and communication-efficient clustered federated learning framework to address non-IID data challenges in Internet of Medical Things (IoMT) environments. Conducted extensive experiments on synthetic datasets to validate the framework's performance and efficiency.

Blockchain-based Authentication and Key Agreement Scheme for Securing Internet of Medical Things Device Network (Published in *Blockchain: Research and Applications*, ScienceDirect)
Designed a blockchain-based authentication and key agreement protocol for securing Internet of Medical Things (IoMT) networks. Performed formal security analysis using the Random Oracle (RoR) model and validated the protocol using the Scyther verification tool.