Sharmila Rapeti

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Education

NIT Silchar　　　　　　　　　　　　　　　　　　　　　　　　Expected May 2026
Bachelor of Elctronics & Communication Engineering (CGPA : 7.39)　　　　　*Silchar, Assam*
- **Relevant Coursework:** Data Structures and Algorithms (C++) , Prob & Stat

Experience

SN Bose Summer Internship　　　　　　　　　　　　　　　　Jun 2025 – Aug 2025
Summer Research Intern - ML/AI　　　　　　　　　　　　　　　　　　*Silchar, Assam*
- **Responsibility**: Enhance underwater image quality for marine datasets using DL frameworks.
- **Challenge**: Baseline CNN model produced low SSIM and PSNR on real-world UIEB images.
- **Learning**: Gained expertise in **hybrid CNN–GNN architectures**, loss optimization, and quantitative evaluation.
- **Action**: Built MARLINet pipeline achieving **30% SSIM** and **5.1% PSNR** improvement over baseline on 890 images.
- **Tech Stack**: Python, PyTorch, OpenCV, NumPy, Matplotlib

SERB CRG　　　　　　　　　　　　　　　　　　　　　　　Jun 2025 – Aug 2025
Summer Research Intern　　　　　　　　　　　　　　　　　　　　　*Silchar, Assam*
- **Responsibility**: Develop a RIS phase control system for 6G D2D networks using DRL frameworks.
- **Challenge**: Need to increase prediction accuracy while ensuring scalability .
- **Learning**: Improved knowledge in **vision-assisted RIS** systems and simulation pipelines. .
- **Action**: Built CNN-based predictor achieving **20% accuracy gain**, developed synthetic scene → label extraction → inference → evaluation workflow.
- **Tech Stack**: Python, PyTorch, NumPy, OpenCV, MATLAB (possible for simulation), custom simulation frameworks

Projects

Zomato Database Design & Analytics │ *PostgreSQL, pgAdmin, git*
- **Responsibility**: Built a normalized database for restaurant, order, and customer data from Kaggle's Zomato dataset
- **Challenge**: Unstructured CSV data with redundancy and inconsistent fields.
- **Learning**: Mastered schema design, indexing, and query optimization in **PostgreSQL**.　**Action**: Designed main (`users`, `orders`) and child (`restaurants`, `order_items`, `menu`) tables, wrote optimized SQL queries, and delivered KPIs—improving query performance by 30%.

Hospital Patient Survey Data Analysis │ *Python, Pandas, NumPy, Seaborn, Matplotlib, Jupyter Notebook, git*
- **Responsibility**: Analyze and clean HCAHPS patient survey data to derive actionable service improvement insights. .
- **Challenge**: 20%+ missing values, inconsistent formats, and categorical imbalances hindered analysis accuracy.
- **Learning**: Advanced **data cleaning techniques, EDA, and visualization** using **Python, Pandas, NumPy, Seaborn, Matplotlib**.
- **Action**: Built a robust data preprocessing pipeline, normalized entries, handled nulls, and visualized trends, improving dataset completeness from 80% to 100%.

Ghibli Weather Forecast App │ *HTML, CSS, JavaScript (ES6+), OpenWeather API, Vercel* , git
- **Responsibility**: Build an interactive, real-time weather forecast application.
- **Challenge**: Integrating API data into a fully responsive interface with custom design.
- **Learning**: Learned API integration, **JavaScript** async handling, and responsive design principles.
- **Action**: Developed weather dashboard using OpenWeather API, deployed on **Vercel** with Ghibli-inspired UI.

Technical Skills

Programming Languages: Python, C++, C
Data Analytics Tools: Pandas, NumPy, Matplotlib, Seaborn, Jupyter Notebook, OpenCV
Machine Learning AI: PyTorch, Neural Networks, Image Processing, Computer Vision, Data Preprocessing, Model Evaluation (SSIM, PSNR)
Web Development: React.js, HTML5, CSS3/Tailwind, Responsive Web Design, API Integration, Vercel Deployment
Databases & Data Management: MySQL, PostgreSQL, SQLite, Database Normalization (1NF–3NF), DBMS, SQL Query Optimization
Software Tools & Version Control: Git, GitHub, VS Code
Core Concepts: Data Structures & Algorithms (DSA), Object-Oriented Programming (OOP), System Design

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EDUCATION

- **National Institute of Technology, Silchar** — Assam, India
  Bachelor of Technology - Electronics and Communication Engineering; CGPA: 7.39 — *Nov 2022 - Present*

- **Sasi Educational Institutions, Velivennu** — West Godavari, India
  HSC ; Percentage: 94.3 — *May 2020 - June 2022*

- **Vivekananda High School, Palakonda** — Andhra Pradesh, India
  SSC ; Percentage: 100 — *July 2012 - June 2020*

EXPERIENCE

Research Intern, NIT Silchar/ Dr. Murugan — *May 2025 – June 2025*
- Responsibility: Developed MARLINet, a hybrid CNN-GNN model for underwater image enhancement.
- Challenge: Addressed low-visibility and noise in real-world UIEB datasets, which impacted object detection accuracy.
- Learning: Applied scalable deep learning pipelines with multi-modal data, optimizing model inference for low-visibility, noisy environments.
- Achievement: Achieved 30% SSIM and 5.1% PSNR improvement over baseline CNN on 890 real-world UIEB image pairs.

Research Intern – SERB-CRG funded, NIT Silchar/Dr.Ranjay Hazra — *June 2025 –Present*
- Responsibility: Led design of a vision-assisted RIS phase control system for 6G D2D networks using semantic grids.
- Challenge: Needed to improve RIS phase prediction accuracy under variable channel conditions.
- Learning: Built CNN-based prediction models with automated hyperparameter tuning to adapt to dynamic wireless signals.
- Achievement: Improved RIS phase prediction accuracy by 20% over existing methods.

PROJECTS

Ghibli Weather App Git Repo   Live Demo
- Responsibility: Built a weather-based mood UI integrating live weather data and Studio Ghibli-inspired visuals.
- Challenge: Implemented dynamic content updates and responsiveness across multiple device sizes.
- Learning: Learned API rate handling, state management in React, and cross-platform design principles.
- Achievement: Deployed via Vercel with smooth UI transitions and scalable state management in React.

DuoDSA - Ongoing Git Repo

- Developing a responsive web application, DuoDSA, using React.js and styled-components, focused on interactive learning for programming languages, DSA, and CS fundamentals.

SKILLS

- **Languages**: C++, SQL, HTML5, CSS-Tailwind
- **Frameworks and Libraries**: React.js, PyTorch, NumPy, Pandas, OpenCV, Matplotlib
- **Advanced Deep Learning**: CNNs , GNNs, automated training pipelines
- **Tools**: Git, Vercel
- **Core Competencies**: Data Structures Algorithms, Object-Oriented Programming (OOP),Database Management Systems (DBMS), automation, scalable architecture design
- **Soft Skills**: Problem solving, cross-functional teamwork, technical communication, time management Debugging & Troubleshooting.

ACHIEVEMENTS

- **Coding Practice**: Solved 200+ problems on Leetcode, GFG, W3Schools

HONORS AND AWARDS

- SOF-IMO Medal of Distinction – 2020-21
- SOF-NSO Medal of Distinction – 2020-21

OTHER TECHINCAL INTERESTS/EXTRACURRICULAR ACTIVITIES

- Technical Interests: Graph Neural Networks,Generative AI
- Reading books & case study research
- Basketball-led and participated in Inter-NIT basketball 2023-2024