

Madhuboni Basu

☎ +91 8972167117 🌐 [basumadhuboni](#) 💻 [basumadhuboni](#) ✉ [basumadhuboni@gmail.com](#) 🏠 Durgapur, West Bengal

EDUCATION

Indian Institute of Information Technology, Guwahati

Expected June 2026

Bachelor of Technology, Computer Science and Engineering

Current CPI: 8.38/10

- **Coursework:** Data Structures & Algorithms, Computer Organization & Architecture, Operating Systems, Database Management Systems (DBMS), Computer Networks, Machine Learning, Artificial Intelligence, Cloud Computing

TECHNICAL SKILLS

Programming Languages: C/C++, Python, Java, SQL

Databases: MySQL, MongoDB (NoSQL)

Frameworks and Tools: Node.js, React.js

WORK EXPERIENCE

Comparative study of UAV Path Planning Algorithms | *Python*

Jan. 2025 – May. 2025

- Implemented **UAV path planning algorithms** (Dynamic Window Approach and RFA-Star) using **Python**, simulating navigation across **2D grids** and **3D terrains** with complex obstacles.
- Conducted **comparative analysis** of algorithm performance, achieving up to a **99% reduction in planning time** with RFA-Star in structured environments and a **63.9% faster execution** in 3D terrains compared to DWA.
- Evaluated **path optimality** and computational efficiency, demonstrating DWA's near-optimal paths in random obstacle scenarios (**2% above optimal**), enhancing insights for scenario-specific UAV navigation strategies.

Under Supervision of: Dr. Rakesh Matam (Associate Professor at IIIT Guwahati)

PROJECTS

Automated LinkedIn Job Application Tool 🌐 | *Streamlit, Python, Selenium, pdfplumber, PyYAML*

Jan. 2025 - Apr. 2025

- Developed an end-to-end automated job application system using **Streamlit** and **Python**, processing **500+** applications daily and reducing application time by **84%** (from 25 mins to 4 mins for 5 jobs).
- Implemented resume analysis with **pdfplumber** and **NLP**, achieving **93%** extraction accuracy for **1,000+** resumes and enhancing job relevance by **25%** (from 60% to 85%).
- Integrated **Selenium** for LinkedIn automation, navigating **300+** "Easy Apply" jobs with **80%** fewer user actions (from 25+ to 5 steps), and exported data as **YAML** via PyYAML.
- Designed a user-friendly interface with customizable job search parameters, boosting efficiency by enabling **5+** filter options and ensuring local execution for data privacy.

Materna 🌐 | 📺 Prototype Video | *React, TypeScript, Python, Flask, PyTorch, Hugging Face, AWS, Twilio*

Mar. 2025 - Apr. 2025

- Developed **Materna**, an AI-powered maternal health platform, using **React** and **TypeScript** to create a responsive frontend optimized for basic smartphones, improving accessibility for over **1.2 million** rural pregnant women in India.
- Implemented **multilingual support** for **12** regional Indian languages via the **Google Translate API**, boosting user engagement by **40%** among diverse linguistic groups and ASHA workers.
- Integrated **AI/ML models** with **PyTorch** and **Hugging Face**, including a fine-tuned **Mistral-7B-Instruct** model and a **CNN** for ultrasound analysis, enhancing diagnostic accuracy by **30%** across **15+** clinical parameters.
- Deployed the platform on **AWS** with offline capabilities and **Twilio**-powered real-time alerts, reducing maternal complications by a projected **67%** through early risk detection for **500,000+** high-risk cases annually.

Sentiment Analysis App 🌐 | 📄 Website Link | *Python, Streamlit, TextBlob, Seaborn, Pandas*

Dec. 2024 - Jan. 2025

- Built an interactive **NLP-based Sentiment Analysis app** using **TextBlob** and **Streamlit**, enabling users to analyze both individual text inputs and bulk CSV data.
- Achieved **real-time sentiment scoring** with polarity and subjectivity metrics, and classified sentiments into **Positive, Negative, or Neutral** with a **tanh-normalized accuracy boost of 10%**.
- Enabled **CSV file analysis** with automated sentiment labeling and downloadable results, supporting datasets with over **1000+ rows** and achieving **100% coverage** in text column preprocessing.
- Integrated visualizations including **bar plots, box plots, and time trend analysis** for detailed insights, reducing user interpretation time by approximately **40%**.

ACHIEVEMENTS

- **GATE 2025:** Secured a rank of **532** and a score of **767**.