

Tamal Mallick

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Summary

Computer Science graduate with hands-on experience in Python, AI/ML, and backend development. Proficient in API design, microservices, and cloud platforms like Azure. Experienced in deep learning, TensorFlow, and PyTorch, with a strong background in deploying AI solutions. Seeking a role to apply Python expertise in developing AI-driven solutions.

Skills

Languages: Python, Go, JavaScript, SQL, C, C++, Embedded C, Java.

Backend Tech: Flask, Go Fiber, Node.js, FastAPI, Microservices, API Design, API Testing (Postman), MySQL, Redis, MongoDB, Pinecone, Scalable Systems, Uvicorn, NGINX, CI/CD, Docker, Linux, Server-side Development, AWS, Azure.

AI/ML & Systems: PyTorch, TensorFlow, Scikit-Learn, Keras, YOLO, Natural Language Processing, OpenCV, Matplotlib, Data Visualization, NumPy, Pandas, Vector Databases, DigitalOcean, Cloud Services, Arduino, ESP32-CAM, Robotics.

Work Experience

Deep Learning Intern | *SERB (IIIT Kalyani)* | [Code Report](#) [Certificate](#) Jun 2024 - Jul 2024

- **Skills Used:** CNN, TensorFlow, YOLO, NumPy, Pandas, Matplotlib, High-Definition Satellite Image Processing
- Worked on high-definition satellite images (80 GB+ of data) to enhance cyclone intensity and track prediction models.
- Fixed cyclone positioning using Mercator projection; preprocessed data with NumPy, Pandas, and Matplotlib.
- Developed deep learning models with INSAT-3D satellite data; achieved 99.6% accuracy in central pressure detection.
- Attended 5–7 weekly meetings; recognized as a top 1% performer for sincerity, perseverance and learning.

Education

Indian Institute of Information Technology (IIIT), Kalyani Dec 2021 - May 2025
B. Tech. in Computer Science and Engineering **CGPA: 8.26/10**

Relevant Coursework: DBMS, Python, Data Structures and Algorithms, Object Oriented Programming (OOPs), Operating Systems, Computer Networks, Machine Learning, Artificial Intelligence, Deep Learning and Neural Networks, NLP.

Project Work

Python Search Engine | [Code Report](#) [Live](#) May 2024 - Jan 2025

- **Skills Used:** PyTorch, NLP, Hugging Face, Flask, Pinecone API, Gunicorn, Nginx, Azure, DevOps, CI/CD
- Built a Python-based search engine by scraping 400,000+ URLs, refining them to 70,000 for optimized indexing.
- Integrated sentence transformers and Pinecone API for advanced semantic search, deployed with a Flask backend.
- Deployed on an Azure Ubuntu Server with Gunicorn and Nginx; integrated a custom domain and SSL for secure access.

OTPify – AI-Driven Fast OTP & Email Service | [Code](#) Jan 2025 - Present

- **Skills Used:** Go Fiber, Python FastAPI, Microservices, JWT, Redis, OpenAI API, LLMs, AI Automation, Email Segmentation, Docker.
- Built a high-performance OTP/email delivery service with Go Fiber, focusing on efficient email dispatch and scalability.
- Designing a dashboard for real-time analytics, including LLM-based rejection summaries and security insights using AI.
- Implementing FastAPI for AI-driven email classification, fraud detection, and frontend integration for easy user access.

AI-Powered Surveillance Vehicle | [Code Report](#) [Demo-1](#) [Demo-2](#) Jul 2024 - Dec 2024

- **Skills Used:** C/C++, Embedded Systems, Web API, GPIO Control, Actuators, Python, Artificial Intelligence, Multi-threading, PyQt.
- Developed a custom C++ web server with API endpoints to control vehicle motors, LEDs, and servos via HTTP requests.
- Developed a PyQt desktop app with multi-threading for smooth 720p streaming, control & YOLO-based object detection.

Task Management and Collaboration System | [Code Report](#) Sep 2024 - Oct 2024

- **Skills Used:** Python, Flask, SQL, Postman, API Testing, Role-Based Permissions, Database Design
- Developed a Flask backend for task management, supporting personal/group tasks with role-based permissions.
- Achieved 100% API coverage with Postman, using scalable database design and comprehensive API documentation.

FREDS - Freedom of Expression in a Decentralized Society | [Code](#) [Demo](#) Jul 2023 - Aug 2023

- **Skills Used:** Python, Flask, React, Web Development, Solidity, Blockchain, MetaMask, ML, Abuse Prevention
- Led development of a decentralized platform on Polygon Mumbai using Solidity, React, with ML for 80% abuse reduction.

Achievements and Certificates

- **LeetCode:** Solved [150+](#) problems using Python, demonstrating proficiency in DSA fundamentals and problem-solving.
- **Letter of Recommendation (Deep Learning):** [Recognized](#) for outstanding performance in a deep learning internship.
- **Reference (BTech Project Mentor):** [Anirban Lakshman](#), Assistant Professor at IIIT Kalyani. Available upon request.