

# Tamal Mallick

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## Summary

Computer Science graduate skilled in backend development, API design, and scalable systems. Proficient in Python, Go, Node.js, and cloud platforms. Experienced in microservices and optimizing server performance. Familiar with AI/ML. Seeking an entry-level Backend Developer role.

## Skills

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

**Core Skills:** Flask, Go Fiber, Node.js, FastAPI, Microservices, API Design, API Testing (Postman), Scalable Systems, MySQL, MongoDB, Redis, Pinecone, 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, speech & 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++, Web API, API Development, Postman, Python, YOLO, Object Detection, Multi-threading, UI/UX, PyQt
- Developed a custom C++ web server with API endpoints to control vehicle motors, LEDs, and servos via HTTP.
- 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 2023

- **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.

**ReLearn - Edtech Platform** | [Code Demo](#) Jan 2023 - Mar 2024

- **Skills Used:** React, Node.js, MySQL, MongoDB, WebRTC, UI/UX, Video Streaming, File Sharing
- Developed a responsive app with React, enabling video streaming and file sharing features.

## 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.