Tamal Mallick

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Summary

Computer Science graduate with experience in AI/ML, deep learning, and computer vision. Proficient in Python, TensorFlow, PyTorch, and NLP, I've built models that address real-world challenges. Seeking an entry-level AI/ML Engineer role.

Skills

Languages: Python, JavaScript, SQL, C, C++, Embedded C, Java, Go (Basic)

Technologies & Tools: PyTorch, Scikit-Learn, Hugging Face, OpenCV, NumPy, Pandas, Matplotlib, Data Visualization, PySpark, Keras, YOLO, Natural Language Processing (NLP), FastAPI, Flask, Django, Node.js, CI/CD, UVICORN, NGINX, Docker, Git, GitHub, Postman, Linux, Multi-threading, API Design, Redis, SQL, Vector Database, Pinecone, AWS, Azure.

Work Experience

Deep Learning Intern | *SERB (IIIT Kalyani)* | *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 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: Deep Learning, Neural Networks, Speech and Natural Language Processing, Machine Learning, Artificial Intelligence, Python, Cryptography, DBMS, Object Oriented Programming (OOPs), Probability and Statistics, Data Structures, Algorithms, Operating Systems, Computer Networks. Graph Theory, Quantum Computing

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**
- Developed a Python query search engine by web scraping 400,000+ URLs, reducing them to 70,000 for indexing.
- Integrated sentence transformer and Pinecone for advanced semantic search, deployed with Flask backend.
- Hosted on Azure Ubuntu Server with Gunicorn, Nginx, and SSL for high performance and security.

Landslide Detection with Satellite Imagery | *Code Report Demo*   Jan 2024 - May 2024

- **Skills Used: Python, TensorFlow, Keras, Deep Learning, Satellite Image Processing, Hyperparameter Tuning**
- Achieved 89.2% F1-score trained on 3,799 multi-channel satellite images, using NDVI, slope, and elevation.
- Enhanced model accuracy through advanced hyperparameter tuning and threshold optimization techniques.

AI-Powered Surveillance Vehicle | *Code Report Demo-1 Demo-2*   Jul 2024 - Dec 2024

- **Skills Used: C/C++, Web APIs, Postman, Object Detection, YOLO, Machine Learning, Multithreading, UI/UX, PyQt**
- Built an ESP32-CAM surveillance vehicle with 360° mobility, integrating Postman-tested C++ web server.
- Developed a desktop app with YOLO-based object detection on 720p (1280x720) video streams and real-time control.

Hand-Controlled Virtual Mouse | *Code Demo*   Aug 2023 - Dec 2023

- **Skills Used: Python, OpenCV, MediaPipe, UI/UX, PyQt, Multi-threading, Computer Vision, Augmented reality**
- Developed real-time gesture recognition with OpenCV and MediaPipe in PyQt, supporting 20+ actions.
- Incorporated configurable sensitivity settings and optimized multi-threading for 3x faster performance.

OTPify – OTPify – AI-Powered OTP & Email Service with Enhanced Security | *Code*   Jan 2025 - Present

- **Skills Used: OpenAI API, LLMs, Email Segmentation, AI Automation, FastAPI, Docker, Microservices, JWT, Redis**
- Developing OTPify, an AI-powered OTP service with FastAPI, ML-based fraud detection, and risk analysis.
- Implementing email/SMS OTP delivery, real-time analytics, and secure OTP verification with expiration.
- Leveraging TensorFlow and PyTorch for ML anomaly detection and providing security threshold insights.

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 project.