Suvaditya Mukherjee

Email: suvadityamuk@gmail.com
Portfolio: suvadityamuk.com
Github: github.com/suvadityamuk

Education

- **University of Southern California** — Los Angeles, CA, USA
  Master of Science - Computer Science (Artificial Intelligence) — *August 2024 - July 2026*
  Courses: *Machine Learning, Deep Learning*
- **NMIMS Mukesh Patel School of Technology, Management and Engineering** — Mumbai, India
  Bachelor of Technology - Computer Science (Artificial Intelligence); GPA: 3.94/4 — *August 2020 - May 2024*
  Courses: *Deep Learning, Data Structures and Algorithms, Machine Learning, Natural Language Processing, Software Engineering, Operating Systems, Mathematics, Computer Organization and Architecture, Computer Networks, Database Management Systems*

Skills Summary

- **Languages**: Python, Java, Dart, Bash, HTML, JavaScript, Rust, C++
- **Frameworks**: TensorFlow, Keras, PyTorch, Scikit-Learn, OpenCV, JAX, Flask, NodeJS, Flutter, React
- **Tools**: Docker, Kubernetes, Git, PostgreSQL, MySQL, SQLite, Wireshark, Weights&Biases, Optuna
- **Platforms**: Linux, Web, Windows, Arduino, Raspberry, AWS, GCP, GitHub Actions, Heroku
- **Soft Skills**: Leadership, Technical Writing, Research, Public Speaking

Experience

- **HARMAN International** — Remote/Bengaluru, India
  Machine Learning Intern (Full-time) — *December 2023 - May 2024*
  - **K-Shot Rotation-Invariant Object Detection Pipeline Development**: Producing new Intellectual Property towards achieving a robust pipeline that can perform K-shot object detection without dependence on rotation alignment. Resulted in pipeline with 35% better results on client data
  - **Zero-shot Time-Series Forecasting with LLMs**: Researching on how to perform zero-shot time-series forecasting using LLMs while building on previous developments in the space.
  - **Spot Instance Handler using Agentic LLMs**: Created an agent-based LLM system using Gemini 1.5 Pro and LangChain that helped in reducing costs by 10% incurred from running non-critical workloads on spot-instances
- **Weights & Biases** — Remote/San Francisco, CA, USA
  Author (Part-time) — *October 2023 - March 2024*
  - **WandB Reports**: Created 3 high-quality Weights & Biases Reports around the newest trends in Computer Vision and Machine Learning including Diffusion Models, Object Detection
  - **Integrations**: Analyzed and presented tools from Weights & Biases such as Sweeps for Hyperparameter Optimization, Experiment Logging, and Remote Execution using Launch
- **PyImageSearch** — Remote/New York City, NY, USA
  External Author (Part-time) — *July 2023 - Present*
  - **Blog Posts**: Writing highly technical and researched blog posts around different challenges within Computer Vision and Machine Learning
  - **Video Blogging**: Making informative videos around the written blog posts for generating educational content
- **Center for Visual Information Technology, IIIT-Hyderabad** — Remote/Hyderabad, India
  Research Intern (Full-time) — *June 2023 - Nov 2023*
  - **Research**: Working towards a publication along Domain Adaptation problems in Autonomous Driving under Prof. C.V. Jawahar and Prof. Shankar Gangisetty
  - **Code Implementations**: Operating with internal tools to perform large-scale GPU training and experimentation on Image Segmentation problems
- **Ivy (lets-unify.ai)** — Remote/London, United Kingdom
  ML Research Engineer Intern (Full-time) — *Jan 2022 - July 2023*
  - **Demos and Examples**: Work done towards adding newer demos, examples, and guides to the internal and external official documentation, most notably around converting torchvision models into TFLite
  - **Front-end and Back-end APIs**: To work on adding to existing infrastructure for front-end and back-end functions in TensorFlow and JAX
  - **Internal AI Developer**: To work on an AI Developer (Code-LLMs) that automates and builds upon the existing codebase and speeds up internal development, along with handling their training through Cloud resources like GCP and AWS
- **Mosaic Wellness Pvt. Ltd.** — Mumbai, India
  Software Engineer Intern (Full-time) — *May 2022 - July 2022*
  - **Image Annotation Tool**: In-house end-to-end tool, developed with TypeScript (APIs from/into Amazon RDS) and integrated into a React frontend to be used by doctors for tagging and annotation of patient images.
  - **ML CI/CD Pipeline**: Designed and partially implemented a Continuous ML pipeline with use of AWS SageMaker, AWS RDS and AWS EC2 for deployment of a classifier.

Leadership

- **Google Summer of Code '23** — Remote
  Org Admin and Mentor - Ivy (unify.ai) — *February 2023 - Present*
  - **Mentor for Hugging Face Model Zoo Projects**: Mentoring Contributors to add newer models and demos to the Ivy documentation
  - **Org Admin**: Handling all communications with Google Open Source Programs Office and maintaining all compliance with program rules
- **Google Developer Expert** — Mumbai, India
  TensorFlow Core, Keras — *May 2023 - Present*
  - **Leader**: Actively mentoring students and early-career professionals around Machine Learning using TensorFlow
  - **Speaker**: Educating people about the TensorFlow ecosystem by delivering talks at various conferences in India and abroad
  - **Contributing Developer - KerasCV, keras.io**: Authored the development of several guides and tools for the Keras ecosystem
- **Google Developer Groups Mumbai** — Mumbai, India
  Co-Organizer and Member — *October 2022 - Present*
  - **Speaker**: Delivering talks around topics of Machine Learning and Cloud Computing at events around India
  - **Mentor**: Helping students get into Deep Learning and Cloud Technologies to jumpstart their development journey
  - **Co-organizer**: Planning events and sessions to increase technology literacy and help cultivate a strong Technical ecosystem around Mumbai
- **Google Developer Student Club - NMIMS MPSTME** — Mumbai, India
  Lead (Full-time) — *July 2021 - July 2022*
  - **Hackathon Organizer**: Conducted a college-level Competitive Programming competition with 100+ participants on a platform developed in-house by our team. Handled end-to-end GCP back-end and streaming server setup solution.
  - **Lead Organizer - GDSC MPSTME AI Summit**: Organizing a series of speaker sessions as lead organizer of GDSC MPSTME AI Summit with Prof. (Dr.) Geoffrey Hinton as keynote speaker.
  - **Google Cloud Facilitator**: Organizing 30 Days of Google Cloud with 100+ participants and 25+ people completing eligibility tasks.

Projects

- **TranscribeMate (Deep Learning, Flutter, App Development)**: A Flutter-based application that allows users to make quick image notes and directly transcribe images to text via OCR using Flutter MLKit. Tech: Flutter, MLKit, Firebase Auth (January '22)
- **Mobile Price Classification (ML, Data Science)**: Data Analysis and development of a Classifier, based on publicly-available MobileClassification dataset. Tech: Python, Scikit-Learn, Numpy, Matplotlib, Pandas, Seaborn (April '22)
- **SecureDataTransmission - (Cryptography)**: A Java-based library that allows data transmission with a two-layer (AES256 + RSA2048) encryption with fully in-built key management. Tech: Java, SQLite3, javax.crypto, Apache Commons (January '22)
- **ISS Location Marker (Networking, REST APIs)**: Simple program to query the location of the International Space Station and mark it on a global map. Tech: Rust, tokio, RESTful APIs (November '21)

Publications and Research

- **Paper: MRI Radiomics in Classification of Diffuse Gliomas**: Work on tumour grade classification prediction problem by Research Group in collaboration with Advanced Centre for Treatment, Research and Education in Cancer, Tata Memorial Cancer Institute
- **Paper: Guiding the Student's Learning Curve: Augmenting Knowledge Distillation with Insights from GradCAM**: Work on investigating the effects of using GradCAM representations of Teacher models as direct inputs to Student models for quicker convergence. [Accepted]
- **Paper: Project Lingua Franca: Democratizing Information through Unified Optical Character Recognition and Neural Machine Translation**: Work on combined Optical Character Recognition and Neural Machine Translation for information translation with high-impact languages as targets [Accepted]

Awards, Certificates and Honors

- **TensorFlow Community Spotlight Award** for the official Keras.io tutorial on Temporal Latent Bottleneck (joint work with Aritra Roy Gosthipaty)
- Nominated by **TensorFlow User Group Mumbai** to the **Google Developers ML Bootcamp**, received scholarship to complete Coursera Deep Learning Specialization - December, 2022
- Selected as Student for **6th Summer School on AI with Focus on Computer Vision and Machine Learning** at Center for Visual Information Technology, IIIT-Hyderabad - July, 2022
- Selected as Student for **Oxford ML Summer School** at Oxford Mathematical Institute, Oxford, UK (Attended remotely) - July, 2023
- Runner's Up at IET Hack N Code 5.0 Hackathon
- Runner's up at IEEE CS Society Analytika - Data-Feud
- Qualified for INSPIRE Scholarship - Govt. of India
- Best Student Award - Jankidevi Public School