

Tushar Tyagi

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Education

Georgia Institute of Technology

MS in Computer Science (GPA: 4.0/4.0)

Courses: ML, ML for Trading,

LLM and AI Agents Research

Aug 2024 - Present
(Machine Learning Specialization)

Indian Institute of Technology Mandi

B.Tech in Computer Science (CGPA: 8.39 / 10.00)

TA: IC 152 - Data Science

Aug 2017 - June 2021
(Minor in Management Studies)

Patent

- **US20240404070A1**: Precise book page boundary detection using deep ML model and image processing algorithms.
[Published: Sept 2024]

Experience

Adobe

July 2021 – July 2025

Machine Learning Engineer 2

Document Classification Model

- Developed real-time doc classification model for Adobe Scan with 90% accuracy, **boosting feature MAU by 50%**.
- Created a downsampling algorithm with **90% accuracy** (comparable to Lanczos) and a **10x speed improvement**.
(Image Classification, Model Optimizations, Image Processing, Keras)

ML Model and Inferencing Pipeline Optimizations

- Reduced Adobe Scan's ML model sizes via quantization, **increasing monthly downloads by 50k**.
- Modified the MobileNetV2-based doc detection model, **reviving 3M+ dormant users monthly**.
- Achieved 3X performance improvement with 4X model size reduction using GPU inference and TFLite CustomOps.
- Boosted boundary detection model performance by **25.6%** through CustomOps in TensorFlow Lite.
- Implemented a **model pre-loading pipeline**, eliminating user-facing lag during GPU model loading.
(Quantization, Pruning, Hardware acceleration,)

Boundary Detection (Segmentation)

- Increased ML model accuracy by **30%**. Enabled team to ship new 'Bulk Capturing Mode'
- Optimized MobileNetV2 arch to enhance model capacity while maintaining mobile-friendly performance and size.
- Developed efficient data creation and augmentation pipelines for fast experiment iterations.
(PyTorch, Computer Vision, Segmentation Models)

Book Mode

- Implemented 'Book Mode' in Adobe Scan for efficient two-page document capture, **used by 5% MAU**
- **Improvements**: Collaborated with the Research team to develop a new segmentation model for Book Mode, improving performance by **100%** and accuracy by **20%**. This Enhanced overall dewarping accuracy from **70% to 80%**
(Image Processing, PyTorch, Segmentation Models, Computer Vision)

Cleanup 2.0 Model

- Developed a segmentation model for form field detection in scanned docs (**70% beta accuracy**).
- Conducted experiments to identify the best downsampling algorithm for the data pipeline.
(Keras, Segmentation Models, Computer Vision, Image Processing)

Acrobat AI Assistant

- Developed an **LLM-based Actions Module Pipeline**, creating a plug & play, platform-agnostic system to map user queries to Acrobat functions with proper arguments.
- Implemented **Chain-of-Thoughts Prompting** to increase complex user queries accuracy by **40%**.
- Created an encoded format, leading to significant perf improvements and enabling migration to larger LLM models.

- Developed real-time agentic solution for troubleshooting queries.
(Prompt Engineering, LLM, ChatGPT)

Furrble

Jan 2021 – Feb 2021

Product Development Intern

- Responsible for making **CRUD API endpoints** for the mobile app using **GoLang**.

Adobe

May 2020 – July 2020

Product Development Intern

- Developed smart image cleaning tools using **image processing**(OpenCV) and **deep learning**(Keras) in Python.
- Created **Word VBAscripts** for synthetic data generation for training.

Technical Skills

Languages: C, C++, Python, GoLang, SQL, Scheme, VBA

Technologies: Keras, TensorFlow, PyTorch, MLFlow, Flask, QT, TFExtended, TFLite, OpenCV, Pandas, Numpy, Jupyter Notebooks, Matplotlib, Docker, Kubernetes

Concepts: Artificial Intelligence, Machine Learning, Prompt Engineering, Computer Vision, MLOPs, Neural Networks, REST APIs, Database, Agile Methodology, Version Control

Certifications

- **MLOps Specialization** [DeepLearning.AI]:
Introduction to MLOps, ML Data Lifecycle in Production, ML Modelling Pipelines in Production, Deploying ML Models in Production
- **Sequence Models** [DeepLearning.AI]

Open Source

- **EinteinPy Organization:** Implemented the translations across different coordinate systems [Python]

Achievements

- Adobe: **Runner-Up: Document Cloud India Hackweek**(Dec 2023), **Winner: Acrobat Desktop Ideathon**(June 2023), **Star of the Month Award**(Sept 2022), **Spot Award**, (Nov 2021, Oct 2024), **Good Works Award**(Aug 2022)
- IIT Mandi: **3rd position**, Freshmen Innovation Challenge "Aavishkar 2018".