ANKUR SINGH

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Summary

With over 5+ years of experience in Product Management, Deep Learning, Computer Vision, and Software Development. I am passionate about solving business problems, building ML products and services, and contributing to OSS. Currently, I am pursuing Masters in Software Engineering at SJSU. In my previous stint, I built a phenomenal team and deployed 4 ML services in production in just 10 months.

Skills

Languages & Databases	Python, Java, SQL, Postgres, SQLite3, MongoDB, Redis
API Development & Web apps	Flask, FastAPI, Appwrite, Postman, Streamlit, Gradio
Software Development	GitHub, GitHub Actions, Python Packaging, Design Patterns, Unit Testing
Machine / Deep Learning	Pandas, Sklearn, XGBoost, Keras, Pytorch, Fastai, Transformers, LangChain
DevOps & MLOps	Docker, Kubernetes, Kubeflow, Accelerate, ONNX, OpenVINO, TorchServe, TFlite

Work Experience

AI Solution Intern, @ INTEL — Remote (May. 2023 - Present)

- Reproduced **GPT-2 Small** model using nanoGPT implementation
- Build NLP Intel Cloud Optimization Modules (ICOM) for AWS
- **Technologies**: Pytorch, DDP, Transformers, Datasets, Kubernetes, Kubeflow, AWS

Graduate Research Assistant, @ SJSU — San Jose, CA (Sept. 2022 - May 2023)

- Worked on improving Knowledge Distillation performance for Traffic Flow Prediction
- Deployed various detection and segmentation models on Edge devices for real-time inference
- **Technologies**: Pytorch, Docker, Jetson, ROS2 Humble, TorchServe, ONNX, NVIDIA Triton, TFLite

ML Team Lead, @ ZOOP.ONE — Pune, India (Sept. 2021 - July 2022)

As a Founding Member of the ML team, built a phenomenal team and led a large effort to scale up the use of ML across the company. **Improved the state of MLOps** (from level-0 to level-1) by setting up annotation tools, model registry, monitoring, automating model training, and establishing other best practices.

- Developed an **OCR service** to extract information from Identity Cards. Service had more than 7+ deep learning models, and still was almost ~6x faster than competition, was more accurate, and supported multi-line fields.
- Build a Heatmap Regression based **document extractor service** to facilitate auto-cropping of ID card or Document. Also exported the model to TFLite (4.4 MB) for edge deployment.
- Lead the development of **liveliness service** which provided features like face detection, face recognition, face matching, and other details. Low latency (~150 ms) allowed us to do real-time inference on video feeds.
- Helped develop **bank cheque service** to extract bank and account details from called cheques.
- **Technologies**: Pytorch, MLFlow, OpenCV, Label Studio, Docker, FastAPI, ONNX, Wandb, FiftyOne, TorchServe

CoFounder and CEO, @ Ai Adventures LLP — Pune, India (Aug. 2018 - Sept. 2021)

- Built the tech-stack required for generation, deployment & distribution of all courses.
- Lead development of various client projects like OCR, Image Search, Smart Attendance, Parking management.
- **Technologies:** Python, React, Vue, OpenCV, Raspberry Pi, FAISS, MongoDB

Education

Masters in Software Engineering @ SJSU — San Jose, CA (Aug 2022 - May 2024)
Masters in Software Engineering (specialization in Data Science) — CGPA : **3.9**/4

BTech in Information Technology @ COEP — Pune, India (Aug 2014 - May 2018)
Bachelor of Technology in Information Technology — CGPA : **7.67**/10

Competitions

Shopee - Price Match Guarantee @ Kaggle — Bronze Medal (207th / 2426)

- Task was to identify similar products using product image, title and description.
- Similarity Search problem with new unseen products in the test set.
- Used supervised (ArcFace Loss), self-supervised learning techniques (like SimCLR, SwAV) and multi-modal feature extraction, followed by KNN (FAISS and Rapids) and ranking to find similar products.

Global Wheat Detection @ Kaggle — Bronze Medal (191st / 2245)

- Task was to detect wheat heads from field images across the globe.
- Object detection problem with extremely noisy data and numerous wrong labels
- Used YOLOv5, EfficientDet-B5, Pseudo labeling, Knowledge Distillation, Mosaic Augmentation and TTA.

Mechanisms of Action @ Kaggle — Bronze Medal (318th / 4373)

- Task was to measure the effect of drugs on genes and cells.
- Multi-label classification problem with 897 input features and 207 output labels.
- Used ensemble of LightGBM, TabNet and Neural Network.

Targeted Pest Control @ Intel Innovation, 2022 — Grand Prize

- Classify different types of weeds and deploy the model.
- Simple image classification problem. Criteria: Accuracy, Inference speed, and model size.
- Used Fastai, ConvNext-tiny, IPEX, MLflow.

Extra Curricular

- Built "**Colab-everything**" package with **30K+ downloads** on PyPI. Allows one to run web-apps in notebook environments.
- Followed "NN: Zero to Hero" course and implemented nanoGPT from scratch. Link : Git repo
- Developed a system using LangChain, OpenAI, and Pinecone DB to summarize documents and enable user interactions with the content of the document.
- Have contributed to OSS like Fastai, MLFlow, LazyPredict, Pytorch Lightning, Category Encoding, Yolov5, etc.