# Samuel Davis

Machine Learning Engineer


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github.com/sam99dave


## SKILLS

**Language -** Python, SQL

**Deep Learning Frameworks -** PyTorch, Tensorflow

**Web Framework -** Flask, FastAPI

**App Framework -** Streamlit

**Cloud Vendors -** AWS, GCP

**Core Skills -** Computer Vision, SageMaker, Docker, Information Extraction and Retrieval, Layout Analysis

**Experience on -** OpenCV, Topic Modelling, Distributed Training, Boosting, LLMs, Vector Databases, LangChain, PEFT, GANs

## ACHIEVEMENTS

Contributed in setting up sports capability DEMO for AWS Re-Invent which attracted many clients.

Developed critical solutions that fast tracked production deal

## CERTIFICATIONS

- Nvidia Fundamentals of Accelerated Computing with CUDA
- AWS Certified Cloud Practitioner
- MLExpert Certificate Of Completion
- Deep Learning Specialization
- Machine Learning Course (Stanford)

## ABOUT ME

Experienced in designing and building Machine Learning and Deep Learning solutions, with a passion for developing AI solutions that solve real-world problems.

## EXPERIENCE

Machine Learning Engineer — **Quantiphi I Mumbai**

**Internal Product Development & POCs** — Aug 2022 - Present

- **Product Development** - Developed & added features to OCR codebase, integrated AWS Textract APIs for all features. Analysed and introduced opensource OCR options such as EasyOCR and pyTesseract. Productionized it using docker and AWS Lambda.
- **Textbook Hierarchy Extraction (*Production*)** - Lead a team of taggers for data tagging and involved in the solution architecture planning of the end to end solution.
- Trained Detectron2 and DiT for object detection. Undertook the exploration of transformer based Donut model, trained and developed custom pre-processing and post-processing for nested hierarchy retrieval.
- Utilized DynamoDB and RDS for required database updates.
- Lead the exploration and analysis of Textract Layout API for layout extraction.
- Productionized the solution using tools such as docker, AWS Lambda, SQS etc.

**Sports Analytics - Coach solution firm** — Mar 2022 - Jul 2022

- **Player Performance Tracking System (*Production*)** - Enhanced the player tracking solution with a custom Object Tracking solution.
- Contributed in the development & optimized scaled-YOLOv3 and custom SVHN classifier for jersey number recognition.
- Developed & trained a custom Action Recognition model using ResNet and LSTM on practice session data.
- Performed rigorous video analysis and developed dataset creation script. Performed hyperparameter tuning and performance evaluation.
- Undertook R&D for optimizing Action Recognition solution, trained and evaluated performance & latency using different CNN backbones such as DenseNet and CSPNet.

**Sports Media - Sportscast** — Nov 2021 - Mar 2022

- **Media archival system for DFL (*Production*)** - Developed an Object Tracking solution for players using YOLOv5 and SORT, customized the SORT algorithm to generate & utilize histograms to reduce ID Breaking issues.
- Performed rigorous video analysis and developed post-processing script to reduce ID Switching issues.
- Optimized GPU utlization of a Face Detection & Recognition solution by batching and using FAISS, reducing the latency by 3x.
- Performed output Data analysis using elbow method and dendograms. Developed Clustering solution for overall performance enhancement & process optimization.
- Developed scripts for video and frame metadata extraction using ffmpeg.
- Integrated ML modules and optimized GPU utilization using and garbage cleaning using multi-processing.

Machine Learning Engineer Intern — **Quantiphi I Mumbai**

**R&D** — Jul 2021 - Nov 2021

- Generated synthetic dataset using Unreal Engine & UnrealCV for Object Detection, Instance Segmentation & Object Tracking task.
- Developed custom data preparation scripts involving contour & thresholding using OpenCV.
- Trained & evaluated model performance for Detectron, YOLOv5, Syn-Transformer and FairMOT on various conbinaiton of real & synthetic data.

## EDUCATION

Bachelor of Engineering - Computer Engineer — July 2017 - June 2021

GPA: 8.97