SURAJ

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EXPERIENCE

Deep learning Engineer 5 months 15 days
AjnaLens by Dimension NXG *Thane, Maharastra, India*

- Generated dockerfiles for building Dense RGB-D SLAM resources like ElasticFusion, CoFusion and MaskFusion along with modifying their source code and dependencies for inferencing on pre-recorded aligned RGB-D samples and Intel realsense D435i.
- Incorporated various methodologies like multiway-registration, Dense RGB-D SLAM and incremental SFM pipelines from Open3D and OpenMVG for experimental 3D scene understanding tasks.
- Modified an existing baseline resource for training 2D object detector and 3D keypoint regressor modules for the single and double stage objectron pipeline.
- Implemented various methods involving the usages of Majority-filter, Array blocking queues etc., to formulate relevant state-machine diagrams for robust hand-gesture recognition using mediapipe 3D handpose estimation module in Native-Android.

SWE, ML Engineer 1 month 15 days
Deep learning Analytics *Remote, Canada*

- Implemented NER based Factoid Extraction, Abstractive and Extractive summarization of webinar videos over baseline resources using Spacy, BERT, BART, Roberta, Longformer-4096 and BigBird.
- Incorporated bayesian change point detection and deep learning algorithms using pytorch-forecasting on the task of ball-change point detection in data acquired from bird eye view of soccer matches.

A.I Team Lead 6 months
AjnaLens by Dimension NXG *Thane, Maharastra, India*

- Spearheaded the team towards pioneering 30 FPS+ for real-time face-mask detection on Native-Android platform using architectures like Tiny-yolo v3 & SSDLite. Kernel-level acceleration via Tensorflow Lite's NNAPI, GPU delegate and Hexagon delegate improved the inference speed further without decreasing the accuracy.
- Independently interviewed, hired, mentored and streamlined the team of 5-7 interns who went on to expedite the prototyping of various A.I modules listed in the planned product roadmap. Moreover, Reinforced and led the entire MLOps lifecycle of all company-wide forked A.I projects after the POC/MVP stage towards productization.

Computer vision and Deep learning Engineer 24 months
AjnaLens by Dimension NXG *Thane, Maharastra, India*

- Used **Cognitive Annotation Tool** to generate labeled dataset for pinch, bloom and fist close gestures from ego-centric views which were then trained for the task of discrete hand-gesture detection via SVM-HOG, Tiny-Yolo v3 and RetinaNet Architectures. The trained models were optimized, quantized and pruned over various levels(FP32-INT8) before deploying them over various edge platforms like Android, Intel-Movidius/NCS2, Qualcomm 835 Dev kits etc for achieving inference speed upto 30 FPS. Moreover, Depth based thresholding on Time of flight data was incorporated to steer the accuracy to the desired goal.
- Architected the pipeline, trained ML/DL models and deployed cloud & edge based micro-services for various experimental/archived machine learning projects for its application in Augmented Reality along with devising techniques for optimisation, quantization and pruning which yielded a latency of less than 50 ms on an average.
- **SDKs/Packages Used:** Tensorflow Sharp, Barracuda, Tflite Interpreter, Intel Openvino Toolkit, Qualcomm SNPE.

Software Engineering Intern 2 months
Devathon *Hyderabad,India*

- Implemented an experimental prototype of conversational e-marketing chatbot through DialogFlow and TF-IDF techniques for the engineering team.

Deep Learning Intern 2 months
Predible Health *Bengaluru,India*

- Implemented experimental Gaussian mixture models for hepatic segmentation LiTS Lung tumor data along with contributing to the data processing pipeline of existing 3D-UNet based segmentation architecture.

PATENTS & PUBLICATIONS

- **Visual Machine Intelligence for Home Automation**: **Suraj**, Ish Kool, Dharmendra Kumar and Shovan Barma in IEEE IOT-SIU 2018.
- **Keystroke Rhythm Analysis Based on Dynamics of Fingertips**: **Suraj**, Parthana Sarma, Amit Yadav, Amit Yadav and Shovan Barma in Springer MISP 2017.
- **OTORNoC: Optical Tree Of Rings Network on Chip for 1000 Core Systems**: Soumyajit Poddar, **Suraj**, Amit Yadav and Hafizur Rahaman in IEEE ISED 2017.

EDUCATION

B.Tech in Electronics and Communications, IIIT Guwahati May 2018
Relevant Coursework: Pattern Recognition & ML, Data Structres, C Programming, OS , Shell Scripting.

SKILLS

Technical Skills	Python,C++,Java, ML, DL, CV, NLP, Javascript.
Soft Skills	Leadership, Project Management, Data Engineering.
Familiar	OpenCV, Android Studio, Apache Spark, Kafka, Hadoop, MySQL, RESTAPIs, Dockers.

PROJECTS

Cognitive Annotation Tool: An automatic annotation tool for labelling images in bulk with their corresponding bounding box annotations.

JetBrains Developer Academy Mini projects of varying difficulty

Train-Infer-MLOps: Machine learning and deep learning model implementations with various real-world use-cases

Asynchronous Speech to Gender Classification ML Pipeline: Speech to Gender detection as a service.

ACHIEVEMENTS

- Employee Appreciation Certificate
- Robotics Competition Certificates

EXTRA-CURRICULAR ACTIVITIES

- Meditating, Reading, Acapella singing, Exploring music across genres, hiking.