Anega Maheshwari

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Portfolio
Bangalore, India

An experienced Software Engineer with 1.5+ years of relevant experience having the ability to understand technical challenges and solving them effectively, thus delivering high quality software. Seeking a challenging environment to learn, explore and apply my skills towards employer interests and enhance my skill-set for deeper understanding.

WORK EXPERIENCE

AllGoVision Technologies Pvt. Ltd., Bangalore

—Software Engineer **NOVEMBER 2020-Present**

Part of DL backend development team.

- Designed, developed and unit tested video analytics based DL features that work across a range of devices (GPUs, CPUs) & integrated with system service.
- Packaged DL solutions using dockers to build installers & sanity tested packages for both Windows/Linux releases.
- Used an efficient mixture of modular programming & OOP to build inference pipelines with code optimization.
- Converted DL models among different frameworks & optimized them to maximize throughput.
- Profiled performance metrics, computational parameters & timing for DL models.
- Involved in bug fixing using Bugzilla, code development & scalability using Git.
- Indulged in Image processing algorithms and research heavy topics.
- Assisting interns with data annotation & led their project development cycle.

Projects:

Class Confirmation Module

A class confirmation module for 'person' & 'vehicle' class on top of object detection.

- Trained a multi-class & multi-output CNN classifier, tested & evaluated model using performance metrics on multiple test sets.
- Converted DL model from Keras to tensorflow's frozen graph for GPU support & Keras to OpenVino for CPU support, using dockers.
- Profiled model & integrated Class Confirmation DL pipeline with server code.

Object Localization

Application: Video analytics solutions such as Tripwire, Vehicle Congestion, etc.

- Performed thorough analysis & comparisons on off the shelf yolo v3-v4 detectors.
- Experimented training with multiple yolo models as base network, using darknet framework. (Added C++ custom support for ●data augmentation, ●enabling layerwise performance of yolo, ●letter box logic for anchor calculation)
- Evaluated models using PR curves, mAP calculation and FPS measurement.
- Converted Darknet yolo weights and post processing to tensorflow & performed KPI testing.
- Converted Darknet weights to onnx followed by pushing post processing inside the model using onnx coding.
- Optimized yolo onnx model by converting it to tensorrt (FP32/FP16) & profiled it.
- Integrated various yolo models with pre and post processing in the DL server code.

Artificial Data Synthesis Tool

Application: Artificial image data generation using segmentation maps

Python & OpenCV based tool that can generate synthetic person and vehicle images (both single-label & multi-label) with ground truth bounding box annotations.

- Developed a tool that takes person and vehicle segmentation maps independently and applies them together on random backgrounds with multiple augmentations.
- Designed for both object detection & object classification data synthesis.

RELEVANT SKILLS

Concepts:

- Convolutional Neural Networks (CNNs)
- Image Processing
- Computer Vision
- OOP (Object Oriented Programming)
- Data Structures

Hands-on knowledge:

- Linux ● Docker ● Bugzilla
- Git & Gitlab ● TensorRT

TECHNICAL SKILLS

Frameworks:

- Keras ●Tensorflow
- Darknet ● ONNX

Programming Languages:

- Python (proficient)
- C/C++ (intermediate)

Libraries:

- Scikit-learn ● Numpy
- OpenCV ● Matplotlib

Visualizer:

- Tensorboard ● Netron

CERTIFICATIONS

- **Deep Learning Specialization**
  (by deeplearning.ai on Coursera)
- **Open Source Software Development, Linux & Git Specialization**
  (by The Linux Foundation on Coursera)
- **Applied Data Science Specialization**
  (by IBM on Coursera)
- **Introduction to Data Science Specialization**
  (by IBM on Coursera)
- **IBM Data Science Specialization**
  (by IBM on Coursera)

Safety Gear Detection

Application: AI driven PPE Kit Detection

Detect and track people appearing in the field of view of the camera and raise alarm when safety helmet is not worn.

- Designed image aspect ratio based processing & obtained understanding of person detection pipeline for initial run.
- Developed a helmet-no helmet classifier & evaluated model using performance metrics.
- Profiled model & integrated safety gear DL pipeline with server code.

INTERNSHIP EXPERIENCE

AllGoVision Technologies Pvt. Ltd., Bangalore
— Age Group & Gender Classification **SEPTEMBER 2020-OCTOBER 2020**
Application: Demographic Analysis

- Worked on feature preprocessing & noise based data augmentation.
- Trained age group classifier and gender classifier individually on facial features (extracted using feature extractor DL pipeline) for both, faces with mask and without mask.
- Evaluated both DL models using performance metrics & optimized for GPU inference by converting from Keras to TF-TRT.
- Profiled model & integrated both DL features with face detection pipeline.

AllGo Embedded Systems Pvt. Ltd., Bangalore
— Emotion Detection **MAY 2019-JULY 2019**
Application: Driver Monitoring System

AI based facial emotion recognition using IR & RGB cameras.

- Collected IR facial data with different gender, age, expression, partial occlusion, illumination & multiple face angles.
- Worked on image preprocessing & augmentation, trained a CNN for emotion detection.
- Evaluated the model & implemented live testing with integration of face detection pipeline.

EDUCATION

Jaipur Engineering College & Research Center, Jaipur —82.33% (8.98 CGPA)
— B.Tech. (Computer Science) (2016-2020)

DAV Centenary Public School, Ajmer —90.4 %
— Higher Secondary Education (H.S.C.) (2015-2016)

All Saints Sr. Sec. School, Ajmer —10 CGPA
— Secondary School Education (S.S.C) (2013-2014)

ACADEMIC PROJECTS

Autoencoders

Aims to implement image denoising, reverse image search & semantic segmentation.
- Django web framework is used for deploying deep learning models to a web app.
- Combines deep learning skills with practical web development.

Child Care Portal

A demo portal made for the govt. to have the data of all the Child Care Institutions, Child Welfare Committees, adoption of children, donations & lost-found children cases online.
-Used HTML, CSS, Bootstrap for responsive web design (Web UI-frontend)

Python Django Web Development To Do App

A To-Do list app that lets users make lists & save them to a database. The users can add, delete, cross & uncross their to-do items in the list.

User Authentication Web App with Python & Django

A User Authorization app that lets users sign up (register) for the site, log in, log out, edit their profile, & change their passwords.

- **Python3 Programming Specialization** *(by University of Michigan on Coursera)*
- **Convolutional Neural Network in Tensorflow** *(by deeplearning.ai on Coursera)*
- **Exploratory Data analysis for Machine Learning** *(by IBM on Coursera)*
- **Programming, Data Structures & Algorithms using Python** *(NPTEL Online Certification)*
- **Introduction to Programming in C** *(NPTEL Online Certification)*
- **Programming in C++** *(NPTEL Online Certification)*
- **Scientific Computing with Python** *(freeCodeCamp Developer Online Certification)*

RESEARCH PAPER

Autoencoders

[Publisher: Springer Nature]
A conference paper presented in 2nd National Conference on the Contemporary Issues in Computer Technology (NCICT-2020) and 3rd International Conference on Recent Innovations & Technological Development in Mechanical Engineering (ICRITDME-2020) held at JECRC.

SOFT SKILLS

- Strong Work Ethic
- Problem Solving
- Punctual
- Cooperative
- Leadership
- Active Listening
- Multi-tasking
- Consistent

LANGUAGES

- English
- Hindi

AREAS OF INTEREST

- DL/ML/AI
- Data Science
- Computer Vision