Krishna Teja Reddy Chinnakotla

+1 5516897755 krishnatejare.chinnakotla@stonybrook.edu

Education

Stony Brook University **2021 – 2022**
Master's in Computer Science *NY, USA*

Indian Institute of Technology, Bhubaneswar (IIT) **2015 – 2019**
Bachelor's in Computer Science *Odisha, India*

Technical Skills

Languages and Frameworks: Python, C++/C, Javascript, React, MongoDB, PostgreSQL, Flask
Libraries: Pytorch, Tensorflow, Keras, Scikit-Learn, Pyspark, OpenCV, Open3D, NLTK, spaCy, Pandas, NumPy, OpenVINO, TensorRT, cuDNN, CUDA, ONNX
Tools: Docker, Kubernetes, Tensorflow Serving, Grafana, Prometheus, BigQuery, Terraform, Airflow, Kafka
Cloud: Amazon Web Services (AWS), Google Cloud Platform (GCP)

Patents and Publications

- "Selective Federated Transfer Learning using Representation Similarity" - **NeurIPS-SpicyFL 2020**.
- "Multi-modal estimation of the properties of containers and their content" - **IEEE 2022**.
- "Systems and Methods for Predicting and Preventing patient collisions" - **Patent under review**
- "Systems and Methods for AI based unconscious patient fall prediction" - **Patent under review**

Experience

Orchard Robotics **June 2022 – Aug 2022**
Machine Learning Engineer Intern *Ithaca, NY*

- Built an end-to-end computer vision pipeline from data ingestion to inference and model monitoring for apple detection in apple orchards.
- Experimented with multiple architectures like YoloV5, Faster RCNN and Mask RCNN. Implemented the Ellipse RCNN model from scratch for accurate detection of occluded apples as well as calculation of apple volume/size.
- Created training jobs on AWS Sagemaker leveraging Pytorch, OpenCV, OpenVINO and ONNX.
- Programmed web services and monitored them using Flask, MongoDB, Docker, Kubernetes.

General Electric (GE) Healthcare **July 2019 – July 2021**
Machine Learning Engineer *Bangalore, India*

- Designed and developed Computer Vision based methods for patient safety such as predicting patient fall from hospital bed and patient collision with medical apparatus. This work is part of **two US patents** under review.
- Built a Computer Vision Pipeline for Patient Safety enhancement in ICU's. Designed deep learning architectures to detect, monitor and analyse patient behaviours, bed boundaries, patient poses and their restlessness in hospitals.
- Worked on deep learning models such as SSD, YoloV4 for Object Detection, PoseNet,OpenPose for Human Pose Estimation using 3D point clouds, Mobilenet based Image Classification, MaskRCNN based Instance Segmentation, SORT for Object Tracking and Facial Emotion recognition. Hosted above models on Trition GPU Inference Server.
- Created training jobs on AWS Sagemaker using Pytorch and deployed them using Python, Flask on AWS Elastic Beanstalk. Simplified the deployment process using Kubeflow and KFServing. This helped the team to fasten the training, deployment process and perform hyper-parameter tuning very efficiently.
- Performed post training model optimization such as model pruning, model quantization(half precision) and deployment on target hardware using C++, TensorRT, OpenVINO and ONNX.
- Programmed C++ modules to retrieve fetal heart rate data using APIs. Implemented a fetal heart rate notification algorithm for a labour and delivery device using multithreading in C++.

OpenMined **Mar 2020 – Dec 2020**
Open Source Research Engineer *Remote*

- Proposed a framework, Selective Federated Transfer Learning(SFTL) to address the problem of source model selection during transfer learning in Federated scenarios. **Published this work at NeurIPS-SpicyFL 2020.**
- Experimented on CNN based architectures using Pytorch and PySyft by leveraging the concepts of representation learning to develop SFTL, which provides accurate selection and transfer of model parameters on the edge devices.

Ittiam Systems **May 2018 – Jul 2018**
Summer Research Intern *Bangalore, India*

- Built an end-to-end deep learning based Multi-View Human Face Recognition pipeline for security systems. Implemented a web service using Javascipt, Flask and integrated it into team's vision analytics platform.
- Dealt with camera calibration and created a deep neural network architecture leveraging MTCNN for face detection, a face alignment algorithm to localize the key points inside faces and a ResNet based model for face recognition.

Projects

Text to Image Generator using GANs

- Developed a Text to Image generation system using Stacked Generative Adversarial Networks(StackGAN) with Conditioning Augmentation for synthesizing high resolution photo-realistic images by taking text as input.

Image Search Engine

- Built an image search engine for fashion images using VGG19 network and hashing technique to find both identical and near-identical images in a dataset.
- Utilized a data structure, called VP-Tree, to scale image search engine to millions of images by reducing search complexity from O(n) to O(log n).

Semantic Code Search Engine

- Developed a code search engine where we could give a short description of the code we intend to find and let the system using its understanding of code find the code snippet matching the given description.
- Built the NLP models using BERT and deployed them into a web-app using Flask.

Multi-modal AI approach to Analyze Unseen Containers

- Secured 3rd position in Multi-modal fusion Corsmal challenge, 2020 which involved estimation of capacity, filling level and filling type of unseen containers. Published this work as part of a **Journal in IEEE Transactions on Multimedia**.
- Leveraged MFCC based audio features and CNN model for sound based filling type classification. Developed container capacity estimation method with RGB-D data's 3D point cloud and Mask R-CNN.

Citi Bike Trip Data Analysis

- Implemented analytical dashboards for NYC Citi Bike trip data to discern trends and derive insights such as busiest stations, famous ride destinations etc.. using GCP, BigQuery, Terraform, Airflow, DBT, Google Data Studio.
- Created an end-to-end data pipeline which includes downloading, processing and uploading of the initial dataset to a Data Lake, moving data from Data lake to a Data Ware House, transforming the data in the Data Ware House and create dashboards.

Flight delay prediction

- Developed a system to predict the probability of flight delay and the delay time using US airline data.
- Experimented with models such as Random Forest, Logisitic Regression, Linear Regression and XGBoost. Deployed the final model via a Flask Web Service using Docker and AWS.

Achievements

- Received early career impact award at GE and got selected to be one among the 14 ambassadors representing GE at One Young World Summit, 2021-Munich.
- Got awarded prestigious Young Scientist Promotion Fellowship (KVPY) by IISc, Bangalore.
- Recepient of National Talent Search (NTSE) Scholarship by The National Council of Educational Research and Training (NCERT),Government of India.

Relevant Coursework

- Computer Vision
- Algorithmic Analysis
- Databases
- Data Science
- Machine Learning
- NLP
- Computer Networks
- Data Structures