Aviral Joshi

aviralj@cs.cmu.edu | Ph #: (412) 482-2884 | LinkedIn | GitHub

Education

Carnegie Mellon University - School of Computer Science — Pittsburgh, PA
Master of Computational Data Science | QPA: 3.56 — December 2020
Coursework: Machine Learning, Deep Learning, Interactive Data Science, Neural Networks for NLP, Cloud Computing.

PES University - Computer Science Department — Bangalore, India
Bachelor of Technology in Computer Science and Engineering | GPA: 8.86 / 10 — June 2019
Coursework: Machine Learning, Advanced Algorithms, Image Processing, Data Science, Linear Algebra, Natural Language Processing

- Secured First Class with Distinction and received a certificate of Specialization in Data Science

Experience

Robotics Institute – Carnegie Mellon University — Pittsburgh, PA
Natural Language Processing Intern — May – Aug 2020

- Working to develop a visual dialog system for an autonomous agent capable of exploring the environment in a disaster scenario while taking context aware decisions for navigation.

VMware — Bangalore, India
Member of Technical Staff, Research and Development Intern — January - June 2019

- Upgraded VMware's on-disk metadata analyzer to support Spanned and Grown Volumes on the new VMFS6 filesystem and designed data structures for efficient in memory caching of filesystem metadata.

VISIO.AI — Bangalore, India
Cofounder, Artificial Intelligence Analyst — May 2017 – May 2018

- Designed a Face Verification service using a custom CNN architecture trained with triplet-loss to authenticate individuals. Deployed the service on the AWS cloud platform to enable remote access via REST APIs.
- Developed a Deep Learning based solution for License Plate Recognition using state-of-the-art Resnet-18 and Yolo architecture to accurately identify and annotate diverse license plates in a noisy real-time environment.
- Designed a product using deep learning and image processing to monitor driver drowsiness levels while meeting computational constraints of an onboard Microcomputer. The product has its patent pending.

Projects

Language Generation from Structured Data — Carnegie Mellon University | Spring 2020

- Developed a prototype-based language generation model using LSTM with Dual-Attention mechanism to generate textual description from tables present in the WikiBio dataset. Selected prototypes using locality sensitive hashing.
- The approach achieved significant BLEU score improvements over autoregressive Seq2Seq models.

Semi-Supervised Subtomogram Classification (In review at BMVC) — Carnegie Mellon University | Spring 2020

- Analyzed macro-molecular structures present in Cryo-ET generated Subtomograms and developed a novel K-Means regularized semi-supervised model to classify them. Our approach beats the state-of-the-art semi-supervised method in low data scenarios and is currently in review at the British Machine Vision Conference (BMVC 2020).

Unsupervised Scene change identification — Carnegie Mellon University | Spring 2020

- Introduced a novel Beta Variational Autoencoder based Unsupervised model which used KL divergence between images to identify scenes changes in Videos. Aimed to reduce manual effort in annotating data for downstream tasks such as Super Slow-Motion and Super-Resolution.

Speech to Text — Carnegie Mellon University | Spring 2020

- Developed a Pyramidal Bi-LSTM model based on the Listen-Attend-Spell (LAS) Architecture to build a speech to text translation system. Improved system by adding Gumbel Noise and varying teacher forcing during training.

YouTube Trending Analytics (Project Website) — Carnegie Mellon University | Spring 2020

- Analyzed factors that govern the YouTube trending page and designed a ML pipeline with XGBoost classifier to predict whether new Videos can trend. Visualized the presence of potential user and platform bias on YouTube.

Stance Detection to Identify Fake News (YouTube Video) — PES University | Spring 2019

- Developed a Deep Learning based LSTM model with Contextualized word Embeddings (ELMo) to detect discrepancies between claim present in a news article and other authoritative news sources to identify potential fake news.

Unconstrained Face Recognition (Publication Link) — PES University | Spring 2018

- Introduced a novel pipeline architecture for face recognition which used the highly optimized CloudForest algorithm to achieve significant training time improvements over previous methods. Published at ICACC 2018.

Skills

- Programming: Python, Java, C, JavaScript, R.
- Databases: MySQL, MongoDB.
- Machine Learning: Pytorch, TensorFlow, Keras, Scikit-Learn, Google AI Platform, Azure Cognitive Services.
- Data Analysis and Processing: Plotly, Tableau, Docker, Unix, AWS for Big Data ETL, OpenCV, Multi-threading.

Recognition and Achievements

- My start-up VISIO.AI was listed amongst "20 Most Promising AI Providers of India (2018)" by C.I.O. review.
- Received recognition from news media outlets for work done on Driver Drowsiness Detection.
- Won 2nd runners up at a Hackathon for developing an Automobile crash alert system using Mobile Sensors.