

Saleem Ahmed

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EDUCATION

- **SUNY - University at Buffalo** Buffalo, NY
Master of Science in CS Specializing in Machine Learning; GPA: 3.65 Aug. 2017 – Dec. 2018
- **NIT - Institute of Technology** Bilaspur, India
Bachelor of Engineering in Information Technology; GPA:8.85/10.0 Aug. 2011 – July. 2015

RESEARCH EXPERIENCE

- **Center for Unified Biometrics and Sensors, UB** Buffalo, NY
Research Volunteer Dec 2018 – Present
 - **End to End Word Recognition Model:** Developed Feature extractor and encoder-decoder to consume pixel data to recognize words, end to end model with object localization and word recognition, submitted to Icdar '19
 - **Change of Address Forms - USPS:** Currently Implementing end-to-end model for USPS funded project to automate recognition of fields in change of address forms
- **UB Computer Science & Engineering Department** Buffalo, NY
Supervised Research under Dr. Mingchen Gao August 2018 – Dec 2018
 - **Image Segmentation in Bio-medical Imaging :** Created model for adversarial training of domain adaptation between MRI scans of Brain Lesions. Performs unsupervised segmentation from source domain to target domain.
- **Ericsson** Santa Clara, CA
Computer Vision Intern June 2018 – Dec 2018
 - **Object Detection and Segmentation Pipelines:** Designed and Implemented deep learning model architecture based on Yolo + MaskRCNN using pytorch and tensorflow - Improved throughput by 10%
 - **Pan-optic Segmentation:** End to end model which segments everything and also detects each instance of an object
 - **Multi-Video Input:** Utilized proprietary data-set to develop methods and types of data that can be distilled from uncalibrated input videos.
- **UB Experiential Learning Department with CUBRC** Buffalo, NY
Graduate Research Assistant under Dr. Andrew Olewnik Nov 2017 – May 2018
 - **Project Ontology Repository:** Development of software for automation of various ontology's in different mechanical manufacturing production system using Neural Nets

WORK EXPERIENCE

- **Faasos Food Services** Mumbai, India
Software Engineer Dec 2015 – May 2017
 - **Large-scale Distributed Web Software Development:** Developed & maintained all REST based Web Services for a multi-tenant architecture.
- **Socomo Technologies-Jugnoo** Chandigarh, India
Full Stack Developer June 2014 – Nov 2015
 - **Micro-Service API's:** Development and deployment of front-end and back-end codebase for a ride sharing company

TECHNOLOGY EXPERIENCE

- **ML/AI:** Pytorch, TensorFlow, Keras, Caffe, OpenCV, Sklearn, Pandas, Numpy, Scipy, Matplotlib, XGboost, Mxnet
- **Software:** C++, JAVA, Python, NodeJS, Django, Express, Angular, React, Ruby, MongoDB, Mysql, Redis, DynamoDB, Git

PROJECTS

- **Human Behaviour Prediction ::** Probabilistic Graphical Methods vs ML vs Siamese LSTM to predict
- **Seq-Gan ::** RNN as sequence generators and stochastic policy gradients as discriminator
- **Seq2Seq ::** Sequence to Sequence RNN generators as a conversational chat bot
- **Variational RNN:** Latent Space based RNNs - Shakespeare passage generation
- **Celebrity Face Detection:** Deep Learning to recognize celebrity faces using CNN in Tensor Flow
- **Homography : Image Panorama:** Image Stitching after homography & fundamental matrix estimation
- **Learning to Rank (LeToR):** Python based prediction system using linear regression
- **Laplacian Blob Detector:** Matlab based Computer Vision and Image Processing Scale-space blob detection
- **Spatial Pyramid Matching for Scene Classification:** Matlab based representation on bags of visual words.
- **Vulgar Abuse filter as Browser Extension - Won SequoiaHack:** Deep Learning based social feed analyzer to block abuse

- **Amazing 10+ months Academic Research Experience:** Grad School - UB
 - **CUBS- Research Volunteer:**
 - * Research with building a feature extractor from images for word representations.
 - * Part of an end to end model for word recognition in images.
 - * Different model architectures experiments includes strided, inception based, residual, dense residual models etc.
 - * Successful paper submission for lecture summarization task using said feature extractor and unsupervised triplet loss.
 - * Currently working on encoder-decoder architecture to use for end to end recognition of change of address forms of USPS
 - **Supervised Research 'Highlight of Masters':**
 - * Developed **unsupervised image segmentation** model for Ischemic Stroke Lesions.
 - * Used adversarial training for domain adaptation.
 - * Based on sota work using normal GAN to domain adapt all layers of base generator model for Brats Challenge and CVPR'18 paper for **structured domain adaptation** between synthetic and real images for self driving using **conditional Gan's** but only adapting the uppermost layer.
 - **Graduate Assistant:** Developed Ontology automation tools. Used neural nets and random forest for automatic generation of ontology's for manufacturing production industries. Software developed in parts with CUBRC
- **Fantastic 8+ months Industrial Research Experience in a Huge Corporate Setting:** Computer vision Research Internship @ **Ericsson** Labs Santa Clara (signed NDA)
 - **Professional Research Experience:** Internship structured around self identification of problem, proposal and experimental solution generation and publishing to internal Ericsson Journals
 - **Increasing Throughput of Image Segmentation Models:**
 - * Identified slowest part of current sota - MRcnn model and experimented replacing it with an intelligent loss function for conversion to regression task
 - * partly successful: 10% increase for instance segmentation; requires further work for semantic and panoptic segmentation
 - **Panoptic Image Segmentation:** Developed end to end model for instance + semantic segmentation. Uses common feature extraction layer then separate downstream task for scoring, localization and per pixel classification - all trained together.
 - **Data Distillation - Applied research:** Experiments into collection of different types of possible data from multiple camera sources (Ericsson proprietary data)
- **Solid 3+ years of Software Engineering Experience:** Dynamic Hyperactive Start-up's
 - **God Mode @Jugnoo - Price Surge Model:** Developed and deployed single-handedly price surge model algorithm for ride sharing app. Delivers real time update to customer fare depending on ratio of supply to demand, marketing campaigns, seasonal and social trends. Analytic Map shows real-time movement of clients and cabs on single Map Visualization with each trip details, coupons applied etc.
 - **Auth Server @Faasos: "Only server that never crashed"- ex team-lead** Created from scratch standalone authentication services for all other applications in the ecosystem. Used **JWT** for tokens and **redis** caching for instant delivery, packaged as an middle-ware for all Api calls.
 - **Inventory Management System @Faasos:** End to end inventory management system with android application, analytics dashboard - keeps track of inventory at every stage of supply chain by reading barcode from android app, updated status tracking for manager on dashboard. **Bonus Project: Auto Indentation**
 - **Timeseries Forecasting @Faasos:** Auto Indenting inventory items in supply chain, initial failure with **Arima** - Shifting to **Hotz-Winter** gave 87% accuracy. Implemented and delivered as part of Inventory management Tool
 - **Database Optimization @Faasos:** Reduced 10% deadlocks on Mysql database by partitioning, adding keys, normalization. Shifted non-transactional data to **MongoDB**. Re-wrote long running transactions as microservices with scheduler caching on **dynamoDB** and lazy write back to MySQL
 - **Devops @Faasos:** Created configuration manager services using stateless **Amazon Lambda Services and S3** to discover any new service and maintain configurations
 - **End to End Ownership @Faasos @Jugnoo:** Owned Product from Story boarding stage to Deployment and Continuous Delivery, Scaling, Cloud Services Architecture.
 - **Diverse Tech Stack @Faasos:** Developed host of products and maintained a lot more - customer facing application, backend API's, internal CRM, marketing, CMS, analytics etc platforms built using **ROR, Django, NodeJS, Java, MySql, Redis, MongoDB**
 - **Self starting Motivation @Faasos:** Part of initial 6 member team that updated entire company tech stack from .Net to MEAN/Django/ROR and scaled to **300k qps** on transactional database
 - **Good Upkeep and maintenance of quality code @Faasos:** Refactored huge parts of code base to reduce errors by 25% (measured as decrease in number of events logged after commit was merged)