SHUBHAM MIGLANI

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Professional Summary

Result-oriented individual with strong analytical and programming skills. Experienced in utilizing statistical analysis, data modeling, and building machine learning pipelines to solve challenging problems and effectively communicate results.

Education

North Carolina State University, Raleigh, North Carolina 4.00/4.00
Master's in Electrical Engineering Jan 2019 – Dec 2020
Punjab Engineering College, Chandigarh, India 8.85/10
Bachelor's in Electrical Engineering Aug 2012 – May 2016

Skills

- **Programming** Python, R, SQL, C, C++, Matlab, Simulink
- **Frameworks & Libraries** Scikit-learn, Pandas, TensorFlow, Keras, NumPy, Pyspark, XGBoost, nltk, spacy, OpenCV, ACL
- **Relevant Skills** AWS–S3 & Machine Learning, Apache Spark, Google Data Studio, Tableau, Docker, Git

Work Experience

MathWorks, Intern**,** Natick, MA May 2020 – Aug 2020

- Developed workflow to switch between different domain libraries (OpenCV, Arm-Compute) during C++ code generation for image processing functions leading to 2 times performance improvement on arm-based processors. **C++, Matlab**

Sabre Travel Technologies, Software & QA Engineer Intern**,** Bangalore, India Jan 2015 – Jul 2015

- Built automation scripts for Data validation & performance testing for 55 Jasper Soft Reports. **Java, MySQL, JIRA**
- Modified 80 scripts to include recovery scenarios for error handling & improving maintainability, increasing productivity by 60%.
- Utilized dynamic SQL queries for automated testing of business rules for RM GUI. **MySQL, QTP, VB Script**

Fiat Chrysler Automobiles India, Assistant Manager**,** Pune, India Jul 2016 – Aug 2018

Academic Experience

Independent Study, WizeView, Raleigh Jan 2020 – May 2020

- Generated datasets and trained OCR model to convert drug label images to text & analyzed image processing techniques to improve performance. **Python, AWS Rekognition, Tesseract-OCR**
- Trained and evaluated NER (Named Entity Recognition) models to identify drug names from the OCR text.
  Models trained: Memory tagger, Random forest, Conditional Random Fields, Sequence tagging (LSTMs).
- Deployed model on iOS with a final accuracy of 76% from 50%, an average time of 1s from 2.24s after hyperparameter-tuning.

Graduate Research Assistant, **ADAC Lab**, NCSU, Raleigh May 2019 – Aug 2019

- Built data infrastructure & developed visualization software for battery data for Smart Battery Gauge. **Python, SQLite, Bokeh**

Graduate Teaching Assistant, Modern Control Systems, NCSU, Raleigh Jan 2020 – May 2020

Academic Projects

CNN for Leaf Wilting Detection

- Developed CNN with transfer learning (**72%** accuracy), Improved accuracy to **77%** with semi-supervised learning (unlabeled data)
- Deployed model as REST API with flask, improved inference speed by **86%** using tflite with quantization optimization

Book Recommendation System

- Implemented Popularity-based, TF-iDF, User & Item-based Collaborative filtering, MLP models for book recommendation system
- Designed a multimodal (CNN+MLP) approach utilizing book covers with categorical data to improve performance by **1.4%**

Face Detection and Recognition

- Face image classification with Gaussian, MOG, T-distribution, & Factor analyzer. Best model AUC score: **0.94**
- Implementation of Cascade of Haar feature classifiers with Adaboost ensemble learning for Face Detection (**78.5%** final accuracy)
- Built a Face Recognition and Verification system utilizing pre-trained Inception v2 for encodings

Customer churn prediction using Spark

- Performed exploratory data analysis, feature engineering, and predictive modeling for churn prediction utilizing Apache spark
- Models trained: Logistic regression, Decision tree, Random forest, and Gradient-boosted trees. Best model F1-score: **82.3%**

Reinforcement Learning - Optimal Control of Human-Robot Interaction system

- Solved the LQR problem for unknown human-robot interaction using the actor-critic method for integral Reinforcement Learning
- Conceptualized and implemented Neural Network for varying human parameters to get an optimal solution of the LQR problem

Image to Image translation through Conditional-GANs

- Investigated conditional adversarial networks as a general-purpose solution for image-to-image translation with different Generators (ResNet, UNet), Discriminators, and loss functions.