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 sophisticated machine learning pipelines to solve challenging problems and effectively communicate results. Involved in data science competitions and motivated to turn ideas and data into products, actionable insights, and meaningful stories

EDUCATION

North Carolina State University, Raleigh, North Carolina GPA 4.00/4.00
Master's in Electrical Engineering 01/2019 – 12/2020
Punjab Engineering College, Chandigarh, India CGPA 8.85/10
Bachelor's in Electrical Engineering 08/2012 – 05/2016

SKILLS

- **Programming** Python, R, SQL, C, C++, Matlab, Simulink
- **Frameworks & Libraries** Scikit-learn, Pandas, Pyspark, TensorFlow, Keras, NumPy, XGBoost, nltk, spacy, OpenCV, ACL
- **Relevant Skills** AWS–S3 & Machine Learning-Boto3, Apache Spark, Google Data Studio, Tableau, Docker, Git

WORK EXPERIENCE

MathWorks, Natick, MA 05/2020 – 08/2020
Intern in Engineering Development Group, Parallel Code Generation team

- Developed workflow to switch between different domain libraries (OpenCV, Arm-Compute) during C++ code generation for IPT functions leading to 2 times performance improvement on Raspberry-pi. Technologies: C++, Matlab

Sabre Travel Technologies, Bangalore, India 01/2015 – 07/2015
Intern in Quality Assurance Department, Revenue Manager Application

- Built automation scripts for Data validation & performance testing for 55 Jasper Soft Reports. Technologies: Java, MySQL
- Modified 80 QTP scripts to include recovery scenarios for capturing known errors & improving the maintainability by making it generic, increasing productivity by 60%. Technologies: QTP, VB Script, HP ALM, JIRA
- Utilized dynamic SQL queries for automated testing of business rules for RM GUI. Technologies: MySQL, QTP and VB Script

Fiat Chrysler Automobiles India, Pune, India 07/2016 – 08/2018
Assistant Manager in Body Shop Maintenance (Car Plant)

PROJECTS

Drug name identification using OCR and Named entity recognition

- Trained Tesseract-OCR to convert drug label images to text, utilized AWS Rekognition (Boto3) for dataset generation & analyzed Image Resize scale & method, Binarization techniques to improve performance
- Trained and evaluated various NER 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, compared to baseline tesseract

CNN for Leaf Wilting Detection in Soybean Crops

- Utilized CNN for multi-classification with data augmentation and transfer learning (VGG-19), achieving **72%** test accuracy
- Improved accuracy to **77%** by implementing semi-supervised learning on unlabeled data through autoencoders
- Deployed model as REST API with flask, improved inference speed by **86%** using tflite with quantization optimization

Customer churn prediction using Spark

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

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

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

Data visualization of battery parameters

- Visualized live battery data employing Bokeh & Flask on RPi for Smart Battery Gauge running currently online at 2 microgrids
- Built data infrastructure using SQLite to facilitate historical battery data visualization based on user criteria