RUFINA GEORGE

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EDUCATION

Columbia University New York, NY
MS in Electrical Engineering Dec 2023
Coursework: Applied Machine Learning, Reinforcement Learning, Heterogeneous Computing, Big Data Analytics.

PES University Bengaluru, IN
BTech in Electronics and Communication Engineering Jul 2020
Minor in Computer Science and Engineering.
Coursework: Digital Image Processing, Pattern Classification, Data Structures, Design and Analysis of Algorithms.

WORK EXPERIENCE

CCC Intelligent Solutions, Chicago, IL
CCC Intelligent Solutions is a company specializing in software platforms and tools that optimize processes related to auto insurance claims, collision repair, and automotive data management leveraging machine learning algorithms.
Data Science R&D Intern May 2023 - Aug 2023
I worked on three projects which included a solution to automate the categorization of thousands of insurance claim related documents, upgrading a collision data predictor system to one leveraging a transformer model, and enhancing the customer care training process by streamlining the categorization of call recordings.

- Successfully launched an ML prototype to production that solves the categorization of thousands of documents.
    - Improved the efficiency of manual document categorization into two tiers by building an annotation tool on Label Studio, also incorporated color coded region of interest annotation capabilities into tool.
    - Designed and implemented five deep learning systems to categorize documents in two tiers by leveraging Optical Character Recognition and Natural Language Processing algorithms.
    - Achieved an accuracy of 85% for the best performing deep learning architecture amongst five.
    - Successfully took the product from prototyping to production in six weeks.
- Successfully deployed a transformer based system for predicting collision descriptors from car crash images.
    - Performed data analysis, data compilation and feature engineering to prepare data for the next phase of in production project.
    - Successfully upgraded the system to a transformer based regressor, resulting in higher accuracy and efficiency in predicting collision DeltaV values.
    - Achieved a 20% improvement in testing efficiency by updating the inference pipeline to a more configurable version.
- Successfully leveraged traditional ML and Large Language models to achieve a 98% accuracy in Customer Call categorization.
    - Delivered a solution for categorizing hundreds of customer care calls for training purposes.
    - Implemented system leveraging HuggingFace language models to classify summaries of transcripted calls into two-tiers - Product Category and Case Type.
    - Significantly reduced the hours required for call categorization by 96% (from approximately 2 weeks to 13 hours) for analyzing 400 call recordings.

Schneider Electric, Bengaluru, IN
Schneider Electric is a global leader in digital transformation and energy management, providing innovative solutions for efficiency and sustainability.
Analyst Aug 2020 - Jun 2022
I was a team member of the global operations division that developed a key enterprise software used by Schneider Electric to collaborate with business partners and customers worldwide. I implemented the Agile methodology of working to deliver several projects in the Customer Identity and Access Management domain.

- Achieved a 10 percent reduction in vulnerabilities by implementing cross-site scripting to prevent security issues and DOS attacks leveraging secure coding practices for successful implementation.
- Successfully integrated User Interface upgrade with the backend of the entire application to ensure seamless functionality and enhanced performance.
- Successfully implemented a critical project required during the Ukraine-Russia global crisis to ensure company operations continue globally without compromising quality, delivered end-to-end product in one month.
- Collaborated with several cross functional teams for the continuous maintenance of code, deprecation of legacy systems, and delivery of bug fixes.

Intern Jan 2020 - May 2020

I successfully delivered two standalone projects - an AWS facial recognition system integrated with Salesforce and a customer data analysis project. Based on the deliverables, Schneider Electric offered me a full-time position as an Analyst.

- Successfully delivered a facial recognition and authentication system which was built on AWS leveraging AWS recognition APIs and integrated it with the company database hosted on Salesforce.
- Performed exploratory customer data analysis using Salesforce Lightning Reports and Dashboards to understand trends in customer data.

KPIT Technologies, Bengaluru, IN

KPIT Technologies is a global IT consulting and product engineering company that focuses on providing cutting-edge technology solutions for various industries, including automotive and mobility.

Summer Intern, Advanced Driving Assistance Systems (ADAS) Jun 2019 - Aug 2019

I successfully designed and delivered a real-time head pose and facial expression recognition system to be used by the Jaguar and Land Rover team in a key project.

- Leveraged transfer learning to train, tune, and deploy two convolutional neural network models for real-time recognition of facial expressions and head poses of drivers.
- Achieved an average system accuracy of 96%, executed system using Keras and OpenCV Python3 libraries.

ACADEMIC PROJECTS

Reinforcement Learning Course Project Feb 2023 – May 2023

Comparative Analysis of SAC and PPO Algorithms on Walker2D Environment

- Designed and implemented experiments to compare Soft-Actor-Critic and Proximal Policy Optimization algorithms using Python libraries.
- Performed experiments in the Walker2D Mujoco environment, a physics engine used to simulate robotics where fast and accurate simulations are needed.

Applied Machine Learning Course Project Feb 2023– May 2023

Popularity Prediction on Spotify Music Datasets

- Performed data mining, exploration, augmentation, and cleaning tasks to compile complete dataset for analysis.
- Implemented and compared various regression machine learning models for popularity prediction of songs.
- Evaluated the impact of features on prediction results using Feature Importance and SHAP plots.

Statistical Learning Course Project Oct 2022 – Dec 2022

Predicting survival of patients with heart failure using Machine Learning and Survival Analysis

- Analyzed heart failure patient data by applying biostatistical and machine learning methods for feature ranking.
- Applied algorithms to extract the most important risk factors to be used in predicting the survival of patients.
- Compared the results obtained before and after feature ranking using R.

Undergraduate Capstone Project Oct 2019 - May 2020

Bone Abnormality Detection and Upper Extremity Recognition

- Published results of capstone undergraduate project on detection of bone abnormalities and recognition of upper extremities in an international journal.
- Leveraged machine learning and deep learning models to implement a two-tier classification pipeline.
- "Intelligent Analysis of X-Ray Images for Detecting Bone Abnormality in Upper Extremities." *Proceedings of International Conference on Communication, Circuits, and Systems*. Springer, Singapore, 2021.

SKILLS

Python, C, MATLAB, Tensorflow, PyTorch, Keras, OpenCV, Agile Methodologies, NumPy, PyCuda, R, GCP, Git, Sci-kit Learn, NLTK, SQL