Dr. Chakravarthy R.V.K.

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Work Experience

Intel - Georgia Institute of Technology (DARPA project) **May 2022 – May 2023**
Graduate Research Assistant - Robust AI for Computer Vision (Advisor: Dr. Polo Chau)

- Developed robust defense against adversarial attacks on ground-based and overhead tracking in PyTorch.
- Improved accuracies of single- and Faster-RCNN based multi-object trackers by 10 and 15 pp respectively.
- Designed novel small scale filtering strategy to negate the effect of moving adversarial patch.
- Achieved 4x increase in computational throughput by optimizing function calls and variables within GPU.

Boeing Research & Technology **Dec. 2017 – Jul. 2021**
Aerodynamics Engineer - Stochastic Regression

- Executed stochastic regression toolbox development project to fuse multiple data sources and provided quantitative estimates on uncertainty, resulting in significant reduction in aircraft certification costs.
- Supervised the integration of statistical modeling framework from Matlab into Python to achieve seamless interaction with Boeing's existing design tools, thus achieved multi-fold increase in the toolbox's reach.
- Formulated cross-functional research projects to meet the requirements of business and engineering units.

Education

Georgia Institute of Technology **Jan. 2022 – May 2023**
MS in Analytics - Data Science & Business Analytics, GPA: 4.0/4.0
Comput. Statistics, Machine Learning, Natural Language Processing (NLP), Business Analytics, Regression, Data and Visual Analytics, Digital Marketing, Det. Optimization, Financial Markets & Risk Mgt.

École Polytechnique, France **Dec. 2012 – Dec. 2015**
Ph.D., Department of Mechanics, GPA: High Honors (Très honorable)
Title of the Thesis: Local and global instabilities in buoyant jets and plumes

Indian Institute of Technology Madras (IIT-M), India **Aug. 2007 – Jul. 2012**
Bachelor & Master of Technology (Dual Degree), Aerospace Engineering.

Projects

Coca-Cola Pricing Strategy (Business Analytics Practicum) **Aug. 2022 – Dec. 2022**

- Identified pricing mismatch across sales channels to enable Coke achieve 10x growth in sales and become a market leader in Spain's still water market.
- Generated $1.4 million additional annual profit by ending Coke's ineffective price discounting strategy.

Automated Essay Scoring (Machine Learning, NLP course projects) **May 2022 – Dec. 2022**

- Developed supervised (neural networks) and unsupervised models (k-Means, GMM) based on BERT, RoBERTa, GloVe and Tf-Idf encodings to classify high-school essays using Kaggle datasets.
- Achieved 64% reduction in test error by varying language models and improved robustness across classes through multi-task learning, balanced re-sampling and data augmentation using auto-encoders.

Crude Oil Price Prediction (Computational Statistics course project) **Apr. 2022 – May 2022**

- Modeled crude oil prices as Hidden Markov Model and deduced the underlying hidden state representation.
- Discovered a weak correlation between the Markov hidden states and the public sentiment on crude oil (obtained by using FinBERT on news articles related to crude oil/energy).

Airbnb Price Prediction (Regression Analysis course project) **Mar. 2022 – Apr. 2022**

- Developed multi-linear regression model to predict Airbnb listing price in NYC based on Kaggle dataset.
- Reduced prediction error by 50% through geo-location based feature engineering and model selection.

Humana-Mays Healthcare Analytics (Case Study Competition) **Sep. 2022 – Oct. 2022**

- Placed in Top 25 teams nationally for developing a robust and equitable model to predict housing insecurity among Humana's Medicare users whilst handling imbalanced data with missing values using LightGBM.

Technical Skills and Leadership

- Refereed manuscripts for **J. Fluid Mech.** and **Physics of Fluids**, highly reputed peer-reviewed journals.
- **Programming:** Python, SQL, R, PyTorch, Shell scripting, Matlab, PySpark, D3.js, OpenMP-MPI.
- **Data Modeling:** Linear regression, variable selection, hypothesis testing, SVM, random forest, XGBoost, PCA, clustering, statistical analysis, deep learning, CNN, sequence models (LSTM, RNN), time series analysis (ARIMA, GARCH), Monte Carlo methods, linear programming, constraint optimization.