Akash Govindarajula

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EDUCATION

Northwestern University M.S. Artificial Intelligence (*CS Specialization*), 2019-20 GPA: 4.0/4.0

Jawaharlal Nehru Technological University B.Tech Mechanical Engineering, 2015-19 CGPA: 9.4/10

- Key Courses: Deep Learning, Statistical Inference, Predictive Analytics, Optimization and Heuristics, Information Theory, Analytics Value Chain, Data Structures, Scalable Softwares, DBMS, Operations Research, Multivariate Calculus, OOP-Java, Robotics.
- Publication[1]: *Effective Analysis of Sales Dataset using Advanced Classifier Techniques*, JARDCS, ISSN1943-023X, Oct 2019. [**PDF**]

SKILLS

- **Languages:** Python (TensorFlow, Keras, Pytorch, pandas, sklearn, numpy), SQL, Java, R, C++, Swift
- **Tools:** Shell, Excel, Git, Tableau, Hive, Spark, Postgres, MySQL, NoSQL, AWS, Kubernetes, Docker, MapReduce, GCP
- **Expertise:** Data Science, Neural Nets, Recommender Systems, A/B Testing (DoE), Probabilistic & Generative Models, Robotics

EXPERIENCE

Home Depot, Data Scientist - Capstone, Sep 2020 - Present Chicago, USA

Data Science Practicum*, *Apr - June 2020*

- Applied regression models to extract KPIs, outliers, and optimized precision by 8%, integrating with kNN, and **XGBoost**.
- Deployed models for store/dept analytics' pipelines in US East to forecast sales performance at 95% accuracy, for upto 3500 products.
- Tabulated correlations and causality insights from pricing/demand metrics (*SHAP/ALEs*), and presented a report to the regional director.

Retail Analytics Council, **Data Science Intern,** June - Sep 2020 Chicago, USA

- Evaluated store KPIs, transactions to filter and identify deal-prone customers, offer impacts, and brand-switching in 33M data records.
- Created analytics models for customer churn and segmentation, and detailed changes to grow the retention by **28%** across 7 geo-zones.
- Implemented A/B Tests and **clustering** to explore demand/price elasticity, and proposed strategies to enhance Q3 returns/conversion rates.

IIT Hyderabad, **Machine Learning Intern**, May - Aug 2018 Hyderabad, India

- Conducted ARIMA, AR **time-series** on Apple, Microsoft, and NSE stocks, to forecast profit margins and returns with 87% accuracy.
- Cross-validated the APR, Sharpe results of backtesting analysis, with the results of B-LSTMs (*SPY quotes and benchmark metrics*).
- Employed **Monte Carlo** analysis on y-finance, to calculate stock payoffs and predict early-calls for various long-term portfolios.
- Harnessed CNNs to determine shelf-life and deformation rates of machinery from noisy images, at an exceeding **93%** accuracy.

Larsen and Toubro, **Data Science Intern - Robotics**, Nov 2017 - Jan 2018 Tokyo/Chennai

- Spearheaded a team of eight trainees (*on-site and Tokyo*), to improve sensor efficiency and performance of industrial robots by 45%.
- Automated production with dashboards designed on Excel & SQL, to **multiply** rotor sales and capacity planning workflows.
- Analyzed CNC operations by logistic regression, and cut down oil discharge by 18% and expenses by 60% (***$8,500 savings/year***).

Tata Consultancy Services, **Machine Learning Intern,** May - July 2017 Hyderabad, India

- Led a team of five, to develop image **classifiers** for defect-recognition in surgical tools/drones, with TF modules and RESTful APIs.
- Built chat-and-voice-bots (***api.ai***) in parallel, while collaborating with clients' product team for scaling & fund approval of classifier apps.
- Reduced operations/testing time further by 20%, and presented a *Kaizen* report to senior partners at TCS (*app in use by **175+** employees*).

PROJECTS AND RESEARCH

- Cycle-GAN: Implemented non-parallel voice conversion, **denoising** on Pytorch, with high resolution & MOS scores. Scaled to AWS and Docker, using fine-tuned PatchGANs, pre-trained ResNet weights, achieving real-world image + audio translations at low error rates < 0.17.
- Wiki-News Parser & BERT-QA: Harnessed **neural nets** and LSTMs to extract data from news & wiki-corpora, expanding to build attention-based encoder-decoder models. **Improved** accuracy 30%, by tuning perplexity/loss functions and recursive decoding. Ensembled LSTMs with **BERT** for QA and NER tasks, and submitted the results for publication. [**report**]
- AWS Sales Analytics: Inspected purchase patterns by **PCA** (*Random Forest, k-means, SVM*) in 0.14 M records. Attained **92%** accuracy for the feature engineering sales forecasts. **Published**[1] results in JARDCS, and detailed *strategies* to optimize lead response times/Qtr-margins.
- Chicago Police Project: Analyzed allegation patterns/repeat-offenders in force with **Spark,** Postgres queries. Visualized violence with heat maps, generated by topic modeling (***LDA***). Forecasted crime trends at a high *f1-score* of **0.84**, surpassing advisor's expectations. [**report**]
- Autonomous Car Projects: Used CNNs to analyze speed, localization, and obstacle response times. Built Torch/Caffe models from *Optical flow* (*NVIDIA*), with a **94%** match of actual metrics to Unity (*Matlab*) simulations. Validated results with regression model calculations.
- Other: Explainable Semantics Systems, **Thomson Reuters** Capstone, iOS Projects - Sentiment analysis/GANs, Airbnb Rental Analytics.

(More projects available at Technical Portfolio and https://github.com/gvsakash).

HONORS

- **1st** in class of ME 2019 and at NU. Certificate of Academic Excellence, Dean's List, and Merit Scholarship for all semesters.
- Technical Advisor / Board Member in SAE, IEEE, and Robotics Club. Delegate at IEEE-CS and **NVIDIA**-GTC conferences.