

PRATIKSHIT SINGH

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EDUCATION

- **University of Illinois Urbana-Champaign, IL, United States** Aug 2022 - Dec 2023
Masters - Computer Science
GPA:3.9/4.00
Courses: DBMS, Web Programming, Software Engineering & Testing
Generative AI, Computer Vision, Data Mining, Transfer Learning, AI
- **Indian Institute of Technology (BHU) Varanasi, India** Jul 2016 - May 2020
Bachelor of Technology - Electrical Engineering
GPA:9.5/10.00
Courses: NLP, Probability and Statistics, Number Theory, Control Systems, Numerical techniques

TECHNICAL SKILLS

- **Programming Languages:** Python3, JavaScript, Typescript, C++, SQL, GraphQL, Bash
- **Technologies:** Django, Flask, Tornado, Hadoop, Spark, Kafka, ReactJS, GitHub Actions, Jenkins, Travis, Docker, Kubernetes
- **Cloud Technologies:** Terraform, GCP, AWS, Heroku
- **Databases/Storage:** Postgres, MySQL, SQLite, MongoDB, S3, Redis
- **Libraries:** PyTorch, TensorFlow, Pandas, Numpy, Sklearn, NLTK

WORK EXPERIENCE

Illinois Center for Transportation, UIUC | Full Stack Developer Dec 2022 - ongoing
Pavement Life-Cycle Assessment Tool

- Leading the design & development of scalable multi-stages complex web applications for Pavement Life & Cost Assessment.
- Used DRF to process requests & fetch data from Postgres, with Redux store for managing hierarchical project data in UI.
- Implemented user-access levels for calculation models & tool stages with Redis caching, and deployed as a multi-container application on AWS Lightsail. [[LCA application](#), [IPR application](#)]
- **Tech Stack:** Django, REST API, PostgreSQL, Redis, React, Redux, AWS LightSail, Docker, Kubernetes

JP Morgan Chase & Co | Software Engineer II Aug 2020 - Jul 2022
Quantitative Tool for Risk and PnL - Full Stack Developer

- Led the development of Athena QIT web application, created trades dashboards to view trading risk & market exposures for 15+ Global Trading Desks, using async tornado web framework and Athena Risk Engines for adhoc risk analysis.
- Designed & implemented Postgres database table & views using feeds from 200+ risk jobs. Further, implementing DB triggers for updating tables from live running risk jobs.
- Accelerated data delivery to dashboards using clustered indexing for SQL and GraphQL API calls.
- **Savings** - Annual cost of \$5 Million by decommissioning legacy third-party applications.
- **Stack:** Tornado-web-server, React, PostgreSQL, GraphQL, DataDog, SDLC, Automated Testing
- Athena Risk Compute Batches Optimization using ML clustering algorithm - Data Scientist
- Built an EOD cron job for optimizing Risk Jobs for IR instruments using XGBoost and Linear regression models, to generate optimized batches to be processed on EC2 pods.
- **Savings** - 84% reduction in total running time for Global jobs running on the Amazon EC2.
- **Stack:** Feature Creation, Regression Models, Elastic-Net, AWS EC2, Cloud Computing, Kubernetes

PROJECTS

Attention Enhanced-Super Resolution GAN [Github](#)

- Implemented SRGAN with multi-scale attention U-net discriminator & residual-in-residual dense blocks generator.
- The AE-SRGAN resulted in better- NIQE score over current SR models & accurately generated sharp edge details & textures.
- **Tech Stack:** Super Resolution, GAN, Attention blocks, RRDB, U-Net, CNN

Domain Adversarial Transfer Learning for Time Series Classification [Github](#)

- Developed methods to generate superior pre-trained 1-D CNN transfer models for time-series classification.
- **Tech Stack:** Domain adversarial networks, Error bounds, Timeseries, DTW & divergence measures, CNN

Fraud Detection on Imbalanced Class Dataset [Github](#)

- Implemented SMOTE sampling, cross-validation methods, and cost-sensitive models on big data with 0.02% positive class.
- **Accuracy:** 97.7 % Train and 95.1% Test with cost-sensitive XGBoost.
- **Tech Stack:** EDA, Pattern mining, SMOTE, Cost-sensitive XGBoost, PCA

Deep Learning-based Fault Detection in Transmission Towers

Power Grid Corporation of India Ltd.

- Implemented CNN CV model using TensorFlow and YOLOv3 network to detect faults in various classes of Transmission Towers using high-resolution images.
- **Tech Stack:** Tensorflow, Keras, YOLOv3, CNN, sliding window, anchor box, IoU