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, Spark, Hadoop, Kafka, ReactJS, GitHub Actions, Jenkins, Travis, Kafka, Zookeeper, 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 web applications for Pavement life & cost assessment.
- Using 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 it 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, having live dashboards to view trading risk & market exposures for 15+ Trading Desks, using async tornado web framework and Athena Risk Engines for adhoc risk analysis.
- Designed & created database schemas, tables, and materialized views for Postgres DB using feeds from 200+ risk jobs. Further implemented DB triggers for updating tables from live 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, Grafana, Agile 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