Adithya Iyer

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EDUCATION

Courant Institute of Mathematical Sciences - New York University New York, NY
Masters in Computational Science *Aug 2022 - May 2024*
Courses Undertaken*: Machine Learning, Fundamental Algorithms, Numerical Methods*

Indian Institute of Technology Bombay Mumbai, India
Dual Degree(Btech+Mtech) in Materials Science *Jul 2016 - May 2021*

EXPERIENCE

McKinsey & Company, Risk Dynamics Group Jul 2021 - Mar 2022
Associate Consultant *Delhi, India*
- Automated the **credit underwriting process** for the Self-Employed customer segment for a major Indian banking client; created systems to underwrite portfolio worth **60+ mil USD** annually.
- Built **5+** qualitative and quantitative models in **R** from bureau, deposits, bank statements and financial sources.
- Conducted workshops for historical data collection, ensured population stability of variables and executed complete **on-ground implementation** of models; model to be used by **100+** credit underwriters.
- Modified rating cutoffs based on risk appetite, and launched a **pan-India pilot** to kick-off adoption of model.

Round Finance May 2022 - Aug 2022
Backend Development Intern *Mumbai, India*
- Designed and implemented backend systems and APIs in **AWS Lambda/MongoDB** by leveraging ***Node.js*** to enable instantaneous verification of payments in **cryptocurrencies** for the RoundPe payment gateway.
- Ideated, structured and implemented the **crypto-donation link** back-end system to accept crypto donations.
- Setup email, authentication and selective data access to different users/admins by using JSON Web Tokens.
- Conducted load testing of concurrent payments; set up **API rate limits** to protect against malicious activity.

PROJECTS

Optimizing Diffusion Models for De-noising - White Paper Sep 2022 - Dec 2022
Guide: Prof. Rajesh Ranganath, Course : Machine Learning *NYU Courant*
- Reviewed literature on generative models(**VAEs, GANs etc**), with special emphasis on diffusion models.
- Reproduced results from Denoising Diffusion Probabilistic Model (**DDPM**) to set benchmark results
- Modified pre-trained diffusion models to accept noisy images as input, and reported effect of input noise level, diffusion input step and diffusion cycles on the de-noising output of DDPM.
- Designed a custom class conditional DDPM for missing pixel imputation; achieved similar images to benchmark.

Structure-Property Relations from Microstructural Images - Thesis, Paper Jul 2020 - May 2021
Master's Project: Guide: Prof. M P Gururajan and Prof. Hina Gokhale (IIT Bombay) *IIT Bombay*
- Awarded **Undergraduate Research Award (URA3)** for excellence in research by the Dean.
- *MIST (MIcrostrusture STatistics): A open source library in Python for the analysis of anisotropic microstructures*: **paper accepted for publication**, library can be found here.
- Designed a **Quick Union-Find** based **Hoshen-Kopelman** clustering algorithm for periodic binary images.

Budnip : Copernicus Accelerator, European Space Agency (ESA) Jan 2020 - Jan 2021
Co-founder : Mentored by Dr Alireza Taravat, Deimos Space UK *Remote/Copenhagen*
- **Won** the **Oi-X Hackathon** conducted by **Denmark Technical University** and **the Copernicus Program**.
- Built **80+ indices** based on ESA Sentinel-2 satellite spectral images; removed images with excessive cloud cover and performed data augmentation and image-stitching to deal with large raster image sizes.
- Built a **U-Net** based semantic segmentation Deep learning model to classify crops based on vegetative indices.

TECHNICAL SKILLS

Computation related courses: Process Control, Optimisation, Data Analysis, Algorithms, Numerical Methods, Machine Learning, Digital Image Processing, Deep Learning, Probability and Random Processes

Programming Skills/Software Packages: Python, PyTorch, Jax, Node.js, React, R, MATLAB, LaTeX, MongoDB, Git, TypeScript, Android Studio, Java, C, C++, SQL