VIGHNESH NATARAJAN GANESH

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DOB: 17th Feb 2002
Link to personal website

Goldman Sachs Summer Analyst, 2022 | Global Alpha Researcher, Trexquant | Visiting Researcher, UK Energy Markets, London Business School | Data Science for Social Good Fellow – University of Warwick UK | ML Lead, Student Ambassadors of Microsoft Learn

Education

B.E. in Computer Science with a Minor in Finance 2019 - 2023

- Birla Institute of Technology and Science, Pilani – Pilani Campus

Experience

Visiting Researcher / London Business School. Aug 2022 – present

- **Modelled** the imbalance system of British electricity market to predict the **settlement prices** using external factors.
- **Improved on the present state-of-the-art algorithm's point and quantile forecast accuracy** using a custom neural network.
- Pinball loss reduced by >90% for the 1st,5th,95th and 99th percentile forecasts and RMSE decreased from 14.7 to 14.5 GPB on **back testing**.
- Currently exploring reinforcement learning approaches to trade on the imbalance prices. Paper underway.

Global Alpha Researcher / Trexquant Investment lp. Oct 2022 – present

- Used Auction-day effect, mean reversion and yield spread to **develop and back test signals on US Treasury bonds**.
- Developed **multiple alphas with Information Ratio > 0.7** treasury bonds and commodity futures (live in production now).
- Working with the data refresh team to find additional factors to populate the internal database (Finding volatility indicators now).

Summer Analyst 2022 / Goldman Sachs. Jun 2022 – Aug 2022

- Created orchestrations using **Functional programming** to malware scan personal loan applications on **MongoDB**.
- Created and scheduled scripts that access multiple Mongo Repositories to restart loan applications across many points of failure.
- Introduced a new decentralized workflow manager to scale applications processed with processing power in a O(n) scale.

Data Science for Social Good Fellow / University of Warwick, UK. Jun 2021 - Aug 2021

- **Worked directly with Economists from Germany's Federal Ministry** of Economic affairs and energy to predict unemployment rates.
- Used VAR, Facebook's Prophet and Neural Networks to beat the Mean Squared Error of their baseline (With MSError 0.164).
- Developed interfaces for data ingesting and modelling parts of pipeline to easily stitch pipeline components from all the researchers.

Projects

Image Domain Translation using GANs / Deep Learning

- Developed novel architecture with 100 million+ parameters and trained on gigabytes of data in a remote server using Python on Linux.
- The architecture was the SOTA NICE-GAN architecture, modified to work well on hyperspectral 31-channel images.

Correlate Carbon Dioxide Emissions to Green Cover / Computer Vision and Satellite Data Processing

- Calculated Time Series CO_2 density data from NASA's OCO-2 data for **5000+ Landsat satellite data files.**
- Inferred correlations between local CO_2 density and the green cover using Python-Jupyter Notebooks to run A/B testing.

Positions of Responsibility

President / Safety and Medical Advisory Council, BITS Pilani

- Led a team of 4 programmers and 2 writers to create a blog site: Website Link.
- Coordinated the logistics and PR of a first aid and a stem cell registry camp on campus.

Vice President of Membership / Toastmasters (Public Speaking Club), BITS Pilani

- **Doubled the membership** of the club within 2 months of holding the VP position. Launched a 'Women Toastmasters' program.

Microsoft Ambassador / Microsoft Learn Student Partners:

- Organized and spoke in an orientation with 150+ attendees about latest trend in both academia and technology industry.
- Appointed as the **ML Lead of the ambassadors** for Aug 2021 – May 2022.
- Organized workshop to **teach students** about **Azure Cloud** Services and **delivered seminars and personal mentorship.**

Academic Publications:

Neue Dimensionen in Data Science/ Germany

- My ML work with the German Federal Ministry to predict German unemployment was published as a chapter in the textbook: Link To Buy

Ensemble Neural Network Approach to Forecast Imbalance Price Densities/ In progress journal paper

- Thesis: Ensemble neural networks can model the extreme quantiles much better than econometric approaches to help risk mitigation.
- Statically significant results have been achieved. Looking at various journals to publish.

Certifications

Neural Networks and Deep Learning; Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization: Structuring Machine Learning Projects; Sequence Models; Introduction to Data Science in Python; Convolutional Neural Networks **/ Coursera**