GAURAV SANGWAN

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EDUCATION

Bachelor of Technology in Artificial Intelligence and Data Science, IIT Jodhpur   November 2020 - June 2024

Courses : Linear Algebra, Probability Statistics and Stochastic Processes, Financial Eengineering, Deep Learning & Dependable AI.
Grad. Level courses : Convex Optimization, Investment Banking, Game Theory, Graph theoretic Algorithms, Distributed Algorithms, Autonomous Systems, Advance AI (Markov Chains and RL), Connectomics.

JEE Advanced: 107(12994) JEE Mains: 99.68%ile(4357) XII Boards: 91(P) 95(C) 84(M) 98(CS) X Boards: 10 CGPA

HONORS

- **IMC Prosperity Challenge 2024**: Ranked in top 6%(645 out of 10,100 teams) as a solo candidate, with exceptional profits in hypothetical goods using algorithm trading.

- **International Quant Championship 2023**: Rebounded from a faulty-alpha setback, achieving a rank of 497 out of 29076 total participants (Top 2%).

- **Indian Institute of Technology Joint Entrance Examinations(IIT JEE):** Ranked in top 0.5% in JEE Main and top 2.5% in the JEE Advanced, with exceptional scores in Physics and Mathematics, 2020.

- Qualified for 2016, 2017 and 2018 **RMO** – Top 5% in KVS region in PRMO. Obtained 38 out of 102 in **RMO-2018**. Cutoff for KVS being 44.

PUBLICATIONS

- First Author Publication in Peer reviewed "Proceedings of the AAAI Conference on Artificial Intelligence".

- First Author Publication communcated in Core-A*-ranked peer reviewd Conference for Secure DL Pipeline Design for Vision transformer.

Find all my publication here.

EXPERIENCE

Research Consultant   June 2023 - Present
WorldQuant Brain   *Remote*

- Implemented multiple cross-sectional, seasonal-momentum strategies in US and China region, achieving a Sharpe ratio of 2.83, returns of 16.34% and turnover of 34.06%, enhanced by combining weakly correlated signals into super-alphas.

- Ranked 2nd among 60 other consultants in advisory cum mentorship program under Stanislav Prokopyev (ex-VP Brain Researcher).

Data Scientist   June 2023 - November 2023
Thynaa Healthy Naturally   *Delhi*

- Designed and implemented an advanced federated learning-based framework for IoT applications, optimizing plant disease detection and fruit ripeness prediction with decentralized data processing for over 50k images everyday.

- Focused on cleaning and organizing datasets, performing statistical and image data analysis for 9 disease classes in a two-stage approach, resulting in improved system-wide performance.

- Achieved an 18.33% reduction in model size and a 93% improvement in inference time through model compression and quantization, facilitating efficient deployment on resource-constrained IoT devices.

Find all my experiences here.

PROJECTS

Adversarial Robustness in Multi-modal Models: Attacking and Defending Vision-Language Systems

- Cleaned and structured data for adversarial attacks on vision-language models, enabling high-quality statistical analysis.

- Developed a novel lightweight adversarial detection metric through statistical analysis, improving model robustness by 13.4%.

- Identified vulnerabilities in multi-modal systems, reducing attack success by 37.8% with simple, effective defenses.

- Highlighted the balance between simplicity and effectiveness in defending multi-modal systems.

SKILLS

Python (Pandas/NumPy), SQL, ML, DL(Pytorch), CUDA C++, JAVA (distributed), KDB+, C++, Linux, Quantitative Research, Backtesting, Statistical Modelling, Academic Writing.

Interests : Chess, Poker, Trading, Hiking, Soccer, Reading, Speedcubing.
Languages : English, Hindi and German.