Rahul Venkatesh

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Education

National University of Singapore — Singapore
Master of Science in Data Science and Machine Learning — *Aug 2023 - Present*

Indian Institute of Technology (IIT), Delhi — New Delhi, India
Bachelor of Technology in Computer Science and Engineering — *Jul 2016 - Jun 2020*

Technical Skills

Languages: C++, Python, SQL, Bash

Tools/Software: TensorFlow, OpenMP, CUDA, Git, GDB

Work Experience

Squarepoint Capital — Paris, France
Software Engineer — *Aug 2020 - Jun 2023*

- Developed and supported (in production) **low-latency** order entry gateways (OEG) for algorithmic trading.
- Built new OEGs to 5+ **exchanges**, including **CME, ICE** and **OSE** over OUCH and FIX protocols.
- Designed frameworks for trading 2 new asset classes: **bonds** and **non-deliverable forwards (NDF)**.
- **Improved performance** of gateway application by **collecting and analysing** latency-related **data**.
- Coordinated with QA and delivered numerous new projects (gateways) and business requests (features).
- Documented workflows and automations to streamline developing new gateways and production support.

Projects

Parallel Laplacian Solver — Prof. Amitabha Bagchi
Algorithms Project — *Aug 2019 - Dec 2019*

- Implemented a novel **random-walk distributed** method to solve an important class of Laplacian systems.
- Leveraged C++/OpenMP API for parallelization and gprof and valgrind for **profiling**.
- Improved performance on sparse graphs with Alias Method and "densifying" **optimizations**.
- Visualized performance against existing Dan Spielman's solver and Bechetti's solver:
  Overall, it's **better than** Bechetti's, and with ample parameter fine-tuning, it's **comparable with** Dan's.

AI Game-playing bot — Prof. Mausam
Artificial Intelligence Project — *Oct 2018*

- Created a bot to play Yinsh, a 2-player game on a hexagonal board with a branching factor of 30.
- Applied **Alpha-beta pruning** with **static move ordering** to choose next move to evaluate.
- Optimized move generation using **Bitboards** and **Zobrist Hashing**, boosting search to 4 moves ahead.
- Fine-tuned weights for explicit hand-crafted features through automated trial-and-error.

Relevant Coursework

Mathematics: Linear Algebra, Calculus, Probability and Stochastic Processes

Computer Science: Artificial Intelligence, Machine Learning, Advanced Algorithms