Anvay Vats

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Education

University of Waterloo (Triple Major) Expected April 2026

Bachelor of Computer Science, Combinatorics and Optimization, and Pure Mathematics *Waterloo, ON*

- **Clubs:** Wat.AI, Wat Street (Quantitative Finance), CS Club, Data Science Club, Pure Math Club
- **Courses: Adv. OOP (exploring the C++20 compiler)**, Adv. Data Abstraction (**Built Interpreters and Assemblers in C**), Adv. Calculus I, II, & III, Adv. Linear Algebra I & II, Adv. Probability, Adv. Ring Theory
- Received the **$25000 Global Math Scholarship** to study Computer Science at the University of Waterloo

Awards

Silver Medal in National Olympiad of Informatics (NOI) — C++ February 2022

National University of Singapore (NUS), School of Computing *Singapore*

- Gold medalists were selected to be on **Singapore's International Olympiad in Informatics (IOI) team**

Projects

Dynamis Trading System *($3.7M USD Monthly Volume Traded)* December 2024 –

Python, Rust, Redis, JAX, AWS CloudFormation (ECS Fargate, EC2, Secrets Manager, TGW, NATS)

- Leading **full-stack development** in a team of 6 with the goal of **low-latency Solana trading strategies**
- Created the **fastest Twitter/X Solana token sniper in the world** with **25ms purchase latency**
- Implemented **context-free grammars with parallel parsing** to generate trading strategies from plaintext user rules and actions generating **Langgraph agentic workflows** to bot strategies
- Architected data-intensive distributed system using **Jito gRPCs** and **NATS JetStreams** with microservies, including **CUDA-accelerated OCR** for image and video processing

Experience

Project Manager – Arvo AI August 2024 – December 2024

LangChain (Langgraph), Ollama, llama.cpp, MLFlow, Weaviate, Docker, PyTorch *Montreal (Hybrid)*

- **Lead developer** of a team of 3 for a shipment logistics chatbot, deploying an agentic workflow in **Langgraph**
- Implemented custom GNN for frieght optimization, running quantized **LLMs on CPU via Ollama/llama.cpp**
- Maintained **PoWs, DoDs, GANTT, RACI, and RAID charts** and did 150+ tickets on Linear in **Agile Kanban sprints**
- Dockerized modules and tested app with GitHub Actions and CI/CD (Jobs, Runners), achieving **90% accuracy, 95% recall, and 100 ms response time** on **RAG** (Weaviate), **chart-generation** (ChartJS), and tool-calling tasks

Quantitative Researcher – TIW Capital ($200M+ AUM) April 2024 – August 2024

Python, C++, Julia, Redis, AWS, Kafka, PyTorch, QuantLib, SQL *Singapore (Remote)*

- Implemented **dynamic risk optimization** systems using **variable position sizing** and **cross-sectional momentum** strategies, reducing drawdowns by 32% while maintaining alpha
- Engineered high-frequency **adaptive trend following** algorithms with multi-asset **normalized signal processing**
- Developed **carry-enhanced strategies** with **deep diversification** models with **LSTM networks**
- Deployed **breakout detection** and **mean-reversion** systems with distributed **Kafka streams** for real-time signals

Data Engineer – iLoF January 2024 – April 2024

Python, FastAPI, Redis, Celery, Docker, Kubernetes, PostgreSQL, AWS Lambda *London, UK (Remote)*

- Engineered **data-intensive pipeline** for timeseries photonics data for **sub-100ms latency** with Redis caching
- Implemented **distributed computing architecture** with Celery and Docker with **Probabilistic PCA**
- Optimized model evaluation with **PostgreSQL materialized views**, reducing inference time by **76%** using async workers, while increasing **prediction accuracy by 82%** using **Random Forests** and **XGBoost**

Machine Learning Engineer – Wat.AI April 2023 – August 2023

Google Colab, PyTorch, TensorFlow, NumPy, OpenAI, AWS *Waterloo (In-Person)*

- Applied **Generative AI** using **CNNs: ResNets and Inception, and Transformers** for image captioning
- Applied **OpenAI's Fine-Tuning** for **image-to-HTML/CSS,** leveraging OCR, BERT, and image segmentation

Technical Skills

Languages: Python, Typescript, Rust, C++, Elixir, C, SQL, Haskell
Concepts: MLOps, BERT, Linear Algebra, Real Analysis, Probability, Statistical Modeling, Compilers
Libraries: NumPy, Pandas, OpenAI (Generative AI, Fine-Tuning), MLOps, BERT, Image Segmentation
Interests: **Documenting how life shapes my beliefs**, Startups, Philosophy, Poker, Mental math, Badminton, Stand-up