Tanvir Sarao

289-623-6233 | tsarao@uwaterloo.ca | linkedin.com/in/tanvir-sarao | csclub.uwaterloo.ca/~tsarao

EDUCATION

University of Waterloo — Waterloo, ON
BCFM, Double Major in Computer Science and Finance — *May 2029*

- **Relevant Coursework**: Designing Functional Programs (**Racket**), Financial Data Analytics (**Python**), Elementary Algorithm Design and Data Abstraction (**C/C++**)
- **Activities**: Computer Science Club, Data Science Club, Rocketry Design Team (**Software Sub-Team**)

TECHNICAL SKILLS

Languages: Python, JavaScript, MySQL, MongoDB, HTML/CSS, Node.js, Express.js, C/C++, LaTeX, Racket
Developer Tools: Git, Amazon Web Services (EC2), Linux, SDLC, Jupyter Notebook, VS Code, Visual Studio, Figma
Libraries & Frameworks: PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, yfinance, TensorFlow

PROJECTS

Financial Portfolio Robo-Advisor - 3rd Overall Winner | *Python, PyTorch, Pandas, Scikit-learn* — Nov. 2024

- Built automated stock filtering pipeline to select 24 optimal equities from US/CAD markets, leveraging volatility metrics and volume data to ensure portfolio stability.
- Developed a market-meet robo-advisor utilizing LSTM **neural networks** with 30 hidden units and MinMaxScaler normalization, achieving 0.63% return during test period while maintaining optimal Sharpe ratios.
- Implemented statistical arbitrage strategy by engineering **multi-threaded** Monte Carlo simulation with **10,000** concurrent iterations, handling real-time currency conversions and minimizing broker fees across a $1M portfolio.

TripIncento - BramHacks 2024 | *Node.js, Express.js, MongoDB, AWS, Linux* — Oct. 2024

- Developed Python-based transit analysis system using **Pandas** and Matplotlib to optimize 15+ bus routes through efficiency metrics and **Google API** heatmap visualizations.
- Built scalable RESTful API architecture using **Node.js, Express.js** and **MongoDB** to integrate user rewards system with 20+ local businesses and process real-time transit usage metrics for demand forecasting.
- Implemented secure **HTTPS protocol** and **JWT authentication** with password encryption for user data protection, engineered responsive front-end with **HTML/CSS** and deployed on **WS EC2** servers using Linux.

Doctors on Dial − JamHacks 8 Winner | *MySQL, Python, MATLAB, TensorFlow, Figma* — June 2024

- Built **CNN deep learning** model using Python, achieving 85% accuracy in early cancer detection from microscopic tissue images, reducing diagnosis time from weeks to seconds and improving patient outcomes.
- Engineered an **authenticated web app** with a zero-knowledge proof blockchain system for secure medical data transfer, allowing for HIPAA-compliant diagnosis with patient information anonymity.
- Hosted **API** architecture integrating blockchain-validated image transfer with CNN deep learning model, handling diagnostic requests with **sub-second** latency.

EXPERIENCE

Instructional Assistant — July 2024 – Aug. 2024
Ultimate Coders — *Vaughan, ON*

- Guided **10+** students weekly in learning fundamental programming concepts such as loops, recursion, and data structures, implementing solutions in Python.
- Led weekly coding classes and overlooked **10+** assignments, improving student project completion rates by over **25%** and parent satisfaction.

Project Coordinator — July 2022 – July 2023
Trillium Health Partners — *Toronto, ON*

- Collaborated with top researchers from Trillium Health Partners to conceptualize, organize and host a successful youth photovoice exhibit promoting physical activity and healthy living.
- Coordinated a pool of **20+** youth for research assessment, led focus groups with **15+** speakers, & coordinated a subsequent in-person research exhibit attracting **300+** attendees, **$2000** in sponsorships, & **10** vendors.