ARITRA KAR

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SKILLS

- **Languages**: C/C++, Python, Java, TypeScript, JavaScript, Golang, R, SQL, HTML/CSS, Bash, MIPS
- **Libraries & Frameworks**: React, Spring Boot JPA, TensorFlow, PyTorch, Scikit-learn
- **Other**: AWS, Azure, Terraform, Docker, Jenkins, Git, CMake, PostgreSQL, NoSQL, Node.js, *-nix, Jupyter, LaTeX, Agile

EXPERIENCE

Royal Bank of Canada — Toronto, ON
Cloud Engineer (Data and Analytics Platforms, Technology & Operations) — *September 2023 - December 2023*
- Developed an automated infrastructure deployment system using **Golang**, **Jenkins**, and **Terraform** to streamline convoluted Databricks workspace deployments within a high-security environment.
- Enhanced backend functionality of key products by developing Java-based microservices using **Spring Boot JPA**, integrated with **Azure Data Factory** and **Microsoft Purview** to optimize data governance.

Sportiqo Labs Inc. — Oakville, ON
Software Developer (Part-time) — *February 2023 - Present*
- Independently spearheading the creation of an automatic sports article generator LLM, employing **Python**, **LangChain**, and **Apify** technologies to streamline content generation.
- Created dynamic and interactive cricket Sporti-score component visualizations using **JavaScript (Chart.js)**, enhancing data understanding and presentation.

BlackBerry Ltd. — Waterloo, ON
Application Software Developer, Product Engineering (CylanceGATEWAY & BBM Enterprise) — *January 2023 - April 2023*
- Designed and developed a multithreaded data engine in **C++** to improve packet-capture efficiency, integrated with a **Python** ML model to predict C2 beacons from the captured network traffic without peeking at packet data.
- Implemented new features for core libraries utilized extensively across multiple BlackBerry projects. Resolved OIDC and 2FA authentication flow issues in Gateway's internal testing tool, resulting in a **50%** efficiency increase.

BlackBerry Ltd. — Waterloo, ON
Software Developer — *May 2022 - August 2022*
- Created automated tools with **Python** and **AWS** for release package management improving efficiency by **30%**.
- Designed and implemented a JSON configuration file semantic validator in **C++** and integrated it into IVY IVDP.
- Orchestrated team of 4 in improving client interaction with the Camera service by successfully implementing the Permission service callback feature while also creating **Bash** scripts to automate building, uploading, and testing.

PROJECTS

Genetic Algorithm Neural Network Car Simulation │ C++, SFML │ January 2024   🔗
- Created neural networks from scratch in **C++** to enable agents to learn to navigate the simulation environment created with **SFML**.
- Integrated genetic algorithms to enhance neural network evolution, achieving progressive improvements in autonomous car decision-making and adaptability.

Reinforcement Learning Mini-projects │ *Python, PyTorch, Stable-Baselines3, OpenAI Gym* │ *August 2023*   🔗
- Developed advanced RL agents by leveraging algorithms from Stable-Baselines3 and environments from OpenAI Gym, enhancing theoretical knowledge acquired in academic coursework with practical application.
- Constructed agents for classic problems and games, including the Inverted Pendulum/Cart-Pole problem, Lunar Lander, and Atari *Pong*, demonstrating diverse application of AI techniques.
- Currently experimenting with creating RL agents to play more complex games such as *StarCraft II* and *DOOM '93*.

EDUCATION

University of Waterloo — Waterloo, ON
Bachelor of Computer Science (Minor in Statistics; A.I. Specialization) — *September 2020 - April 2025*
- **Relevant Coursework**: AI, ML, OS, Algorithms, Data Structures, OOP, Databases, Compilers, Stochastic Processes
- **Term Distinction**: All academic terms (Fall '20, Winter '21, Fall '21, Winter '22, Fall '22, Spring '23)
- **Organisations**: **Wat Street** (Quantitative Dev.), **Entrepreneurship Club** (Sr. Full Stack Dev.), Poker Studies
- **Awards**: President's Scholarship of Distinction ($2k), Mathematics International Experience Scholarship ($5k), Certificate of Distinction in Euclid Mathematics Contest *(Top 25% worldwide)*