

Matthew Trent

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EDUCATION

University of Victoria

Honors with Distinction BSc in Computer Science (First-Class GPA); on Scholarship (x6)

- **4.12/4.33** or **3.92/4 GPA** (translated from 9-scale; includes TRU transfer credits).

Sep. 2021 – Aug. 2024

Victoria, BC, Canada

RESEARCH EXPERIENCE

Kurlox: Novel Decentralized Peer-to-Peer Search Engine

Self-directed R&D with Apr. – Aug. supervisor Dr. Anthony Estey

- Enables node-based partitioning of a decentralized search index, featuring a combinational search ranking algorithm powered by independent, cryptographically secured network crawler nodes.
- Maintains a Byzantine fault-tolerant, trustless infrastructure using Go-based P2P networking, consensus algorithms for persisting authoritative public keys, and the upkeep of general state through multiple Kademlia-based DHTs.
- Facilitates efficient semantic search by storing replicas and shards within a density-focused, dynamically partitioned 384-dimensional vector embedding space.
- Includes a draft paper that remains private due to ongoing efforts to secure funding for commercial development.

Apr. 2024 – Present

Victoria, BC, Canada

Cortex Labs: DECISION-MAP

Undergraduate research assistant & developer with PI Dr. Mauricio Garcia-Barrera

- Productionized a big-data visualization tool relating to brain injury, mental health, and addiction. This project has been presented globally at events sponsored by the DEA and Homeland Security, to a Canadian MP, the Canadian Traumatic Brain Injury Research Consortium, and the Global Neuropsychology Congress in Portugal.
- Built under the associate dean of research and graduate studies.
- Developed their lab's website from scratch.

Sep. 2023 – Jun. 2024

Victoria, BC, Canada

PROFESSIONAL EXPERIENCE

Probe

Software Engineering Intern

- Actively contributing to the development of a full-stack nightlife management platform, leveraging TypeScript, Node.js (Express), React Native, Next.js, and React, with a focus on scalability.

Jan. 2025 – Present

Vancouver, BC, Canada (Remote)

Virtual Smart Chain

Software Engineering Intern

- Implemented decentralized infrastructure protocols, including those present in Ethereum and Bitcoin standards.
- Engineered core node cryptographic functionality, including Key and Eth DIDs, Boneh–Lynn–Shacham signatures, JWEs, JWSs, and more.
- Designed real-time HIVE blockchain block and transaction streaming, storing, and processing service.
- Aided in Go DEX implementation, including swap, store, deposit, and withdraw L2 smart contract functionality.
- Developed virtualized Rust Merkle Tree zero-knowledge proofs (zk-SNARKs) for network integration.

Sep. 2024 – Dec. 2024

California, USA (Remote)

Confesi

Software Engineer & Founder, led team of 5

- I personally wrote almost **300,000 lines of code** while managing team tasks, PRs, GitHub Issues, etc.
- Fullstack social media application for students. Server and client utilize tech such as Dart, Docker, GCP, AWS, Go, PostgreSQL, Redis, Firebase, JavaScript, Flutter, and more to deliver a seamless cross-platform experience.
- Implements: Infinite feeds, threaded comments, live chat, notifications, authentication, hottest daily posts, achievements, profiles, curated content by individual campus, admin/mod role-based permissions, and more.

Mar. 2022 – Aug. 2024

Victoria, BC, Canada

Stend

Software Engineer

- Developed Flutter app features, including demographically-tailored reviews, user profiles, and API service layer.
- Oversaw client and server team collaboration, ensuring seamless integration and adherence to best practices.

Dec. 2021 – Oct. 2022

Ontario, Canada (Remote)

Van Belle Nursery

Software Developer

- Championed the adoption of Flutter to company leadership for internal use, resulting in being hired that night.
- Developed a POC cross-platform mobile application for use across business verticals: time logging, finances, authentication, efficient data table storage/searching, etc.

Summer 2020

Abbotsford, BC, Canada

NOTABLE PROJECTS (50+ MORE ON MY WEBSITE: [MATTHEWTRENT.ME](https://matthewtrent.me))

- Low-Level Hyper Optimization of Transcendental Function** | *Includes large report* May 2024 – Aug. 2024
- Developed an efficient implementation for $\log_2(x)$ calculations on a Raspberry Pi 4 B 8GB with a Broadcom BCM2711 SoC (1.8 GHz 64-bit quad-core ARM Cortex-A72, 1 MB L2 cache).
 - Achieved 43% improvement across 5 key metrics: page faults, branch misses, ASM length, cycles, and instructions.
- Quantum Computing Circuit Designer & Simulator** | *Published on Homebrew* Jun. 2024
- CLI/TUI implementing 20 gates, enabling execution of quantum algorithms, including Bernstein–Vazirani, Quantum Teleportation, Grover’s Search, Quantum Phase Estimation, Quantum Fourier Transform, and more.
- Real-Time Machine Learning Predictor of Hockey Games** | *Includes large report* Mar. 2022 – Oct. 2024
- Utilized logistic regression and LSTM neural networks in a time-dimensioned format for mid-game projections.
 - Leveraged over 1.75 million shot entries with 42 engineered features, data preprocessing, and predictive modeling.

HACKATHONS

- WECS Engineering** | *3rd; P2P distributed node securing roommate IOUs with asymmetric cryptography* Oct. 2024
- COVEHACK** | *Founded, judged, and ran with 50+ RSVPs* Aug. 2024
- UVic Engineering Competition** | *2nd; cloud-first CRDT-based collaborative multi-language code editor* Jul. 2024
- UVic Artificial Intelligence** | *Developed competitive heuristic-based Monte Carlo tree-search algorithm* Feb. 2024
- UVic Engineering Competition** | *1st; cross-platform mobile app connecting students to tutors* Jul. 2023
- Island Health Hospital** | *Found **serious** infrastructure vulnerability pre-event, awarded for disclosure* Mar. 2023

PUBLIC SOFTWARE PACKAGES (500-1,200 WEEKLY DOWNLOADS)

- Dynamic Seed-Based Deterministic Random Color Generator** | *Published on Pub.dev* Jan. 2025
- Trent State Management Framework** | *Published on Pub.dev* Jan. 2025
- React Hover Graphic** | *Published on NPM* Jan. 2025
- Flutter Port of useOptimistic Hook** | *Published on Pub.dev & in popular newsletter FlutterTap* Feb. 2024
- Remote App Kill Switch** | *Published on Pub.dev* Feb. 2024
- Mask/Hash-Based Serializer For Sensitive Struct Fields** | *Published on Pkg.go.dev* Jan. 2024
- Rust-Based CLI GitHub Commit LOC Tracker** | *Published on Homebrew* Jan. 2024
- UI Alert Overlay Controller** | *Published on Pub.dev* Jan. 2023
- App Scrollview Manager** | *Published on Pub.dev* Nov. 2022
- Cross-Platform Native iOS View Emulator** | *Published on Pub.dev* Oct. 2022
- Core App Utilities & Shortcuts** | *Published on pub.dev* Oct. 2022

SOFTWARE TOOLS (NONE USED NEFARIOUSLY)

- Pathfinding Visualizer** | *Visualizes algorithms like Dijkstra’s, A*, BFS, DFS, etc.* Nov. 2024
- Menti.com Controller Bot** | *Allows unlimited votes per poll* Mar. 2024
- Discord Moderation Bot** | *Serves ~2,000 users* Dec. 2023
- University Class Attender & Quiz Solver Bot** | *Solves attendance quizzes* Nov. 2023
- GitHub Contribution Graph Painter** | *~4,000 uses; 1st on Google for related searches; 70+ stars* May 2023
- Real-Time Markdown Stack Overflow Badge Generator** | *~40,000 uses* Apr. 2023
- Leetcode Solver** | *Solves ~2,000+ questions/day; used in Carleton & USC graduate students’ studies* Jan. 2023

MISCELLANEOUS

- Custom Coding Blog Site** | *10 technical articles & 10,000+ reads (favorites below)* Jan. 2024 – Present
- Solving 1,782 Leetcode questions in one day
 - Building an optimistic update hook for Flutter apps
- Discord Learn-to-Code Coding Community** | *~2,000 members & ~200,000 messages* Nov. 2022 – Present
- Personal Coding Instagram Account** | *~27,000 followers & 11,000,000+ views* Jul. 2020 – Present
- Stack Overflow** | *~3,200 reputation & ~100 answers* Mar. 2020 – Present
- Non-Personal Coding Instagram Account** | *~43,000 followers & 1,000,000+ views* Nov. 2018 – Present
- Volunteer Work** | *Abbotsford Youth Council, Soup Kitchen, & Barnabas Family Camp* Intermittent