

# Tyler Beach

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## EDUCATION

### University of Alberta

*Bachelor of Science in Computer Science*

December 2025 (Expected)

*Edmonton, AB*

## EXPERIENCE

### Software Developer Intern

*QOL MedTech*

January 2025 - April 2025

*Calgary, AB*

- Architected and launched a scalable, multi-tenant web app for a fast-paced startup using **Next.js**, **Fastify**, **TypeScript**, and **Tailwind CSS**, enabling remote physiotherapy for Clients, Trainers, and Admins.
- Built and documented RESTful APIs in **Fastify** and integrated them with a **PostgreSQL** database, enabling reliable data flow between the frontend and backend services.
- Designed and implemented secure, role-based authentication and authorization workflows using **JWT**, **AWS Cognito**, **RDS**, and **S3**, ensuring HIPAA-compliant data access and storage.
- Improved API performance 30% through **PostgreSQL query optimization** (indexing, connection pooling) and **EC2 auto-scaling**, handling 50% more concurrent requests.
- Created the startup's first 3D motion visualization system for remote physiotherapy trainers, enabling accurate patient movement analysis through real-time Three.js rendering of sensor data.

## PROJECTS

### MediMinutes | *Next.js, TypeScript, Tailwind, AWS, PostgreSQL, Prisma, Python*

[Website](#)

- Engineered a gamified medical learning platform featuring **daily crosswords**, **symptom-diagnosis matching**, and **interactive quizzes**, with 200+ topics and progress tracking via personalized dashboards.
- Architected a reward system with unlockable avatar customization to boost user engagement and retention.
- Created an automated content pipeline using **Beautiful Soup** and **custom algorithms** to generate daily puzzles from 20k+ medical data points, eliminating manual updates.
- Implemented secure authentication (**Google OAuth + custom auth**) and real-time leaderboards to foster competitive learning among medical students.

### Course Helper Bot | *Python, Express.js, JavaScript, MongoDB, Heroku, Linux*

[Repository](#)

- Scraped and normalized the entire University of Alberta course catalog (1,000+ courses) using **Python** and **BeautifulSoup**, storing structured data in **MongoDB** for efficient querying.
- Built a production-ready **REST API** with **Express.js** to serve course information with 99% uptime, helping 50+ students and faculty streamline academic planning through automated queries and custom commands.
- Developed an interactive **Discord bot** using **Discord.js** that provided instant access to course details, prerequisites, and schedules through structured command-based queries.
- Architected a **scalable backend system** deployed on **Heroku** and **Linux** that automatically updated course data each semester through scheduled scraping jobs.

### Event Horizon | *Java, Firebase, JUnit, Espresso, UML, Agile*

[Repository](#)

- Co-developed an Android event management app using **Java** and **Firebase**, featuring QR code check-ins, real-time attendee tracking, and geofenced event creation for 100+ simulated users.
- Standardized the codebase for 6 Engineers using MVC pattern, isolating Android Activities from business logic and Firebase data layer resulting in an accelerated project timeline by 15%.

### Algorithm Visualizer | *React, JavaScript, Tailwind*

[Website](#)

- Designed an interactive web application to **visualize sorting and pathfinding algorithms** to aid users in understanding algorithmic concepts through visual representation, improving user comprehension.
- Implemented a **pathfinding feature** to demonstrate algorithms like **BFS** and **DFS** to illustrate their efficiency in finding the shortest path in a grid, providing a comprehensive educational tool.

## SKILLS

**Languages:** Python, JavaScript/TypeScript, HTML/CSS, Java, C, C++, SQL, Golang, RISC-V

**Frameworks:** React, Next.js, Node.js, Express.js, Fastify, Django, Flask, Tailwind

**Technologies:** AWS, Firebase, Supabase, PostgreSQL, MongoDB, CockroachDB Gem5, OpenAI, WebSockets

**Dev Tools:** Git, GitHub, GitHub Actions, Vercel, Heroku, Docker, Linux, Postman, VSCode, Figma