Pal Tilva

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Education

Simon Fraser University **May 2027**
Bachelor of Science in Computer Science (GPA 3.64) Burnaby, BC

Relevant Coursework: Data Structures and Algorithms, Probability and Computing, Web Development, Programming Languages, Discrete Mathematics, Linear Algebra, Calculus 1 and 2.

Projects

AstroViz | *Node.js, Three.js, JavaScript, React, TailwindCSS* **Oct 2024**

- Recognized for innovative design and educational impact at Fall-Hacks 2024, earning special honors for delivering a creative solution within a 9-hour beginner-level hackathon.
- Designed and implemented an immersive 3D web application using Three.js, JavaScript and TailwindCSS, enabling real-time planetary simulations with interactive user engagement.
- Architected a monolithic MVC backend in Node.js, integrating 2+ APIs and 10+ parameters to dynamically fetch and display planetary data.
- Executed Test-Driven Development principles to ensure stability and maintainability, delivering a fully functional prototype under time-critical constraints.

TeachMeALanguage | *Python, Pygame, PyTest* **May 2024 – July 2024**

- Developed a Python-based application to teach the endangered Blackfoot language, leveraging the Strategy Design Pattern to implement a modular "Learn" mode for associating words with images and sounds, and a "Play" mode with gamified seek-and-count challenges.
- Implemented dynamic word management using Firebase, supporting over 150 words and phrases, with Pygame handling 50+ sound clips for immersive auditory learning.
- Engineered custom image processing functions for recoloring, resizing, mirroring, and random placement while achieving 100% functional code coverage with PyTest.

ReportVan | *Next.js, React, TypeScript, TailwindCSS, ShadCN* **Nov 2024 – Dec 2024**

- Collaborated in a team of 5 to develop a high-performance, web-based emergency reporting system using Next.js with server-side rendering (SSR), achieving a Lighthouse score of 95 and 100% compliance with the Product Requirements Document (PRD).
- Designed and integrated Leaflet maps API with OpenStreetMaps to dynamically visualize emergency reports, streamlining user interactions with synced map zoom, position, and a filtered report list.
- Enhanced form validation by integrating Zod for schema validation and google-libphonenumber for robust phone number validation, ensuring data accuracy and user input integrity.
- Improved application performance and maintainability by implementing memoization and developing custom React hooks to debug lifecycle events effectively.

Volunteering

Calc Connect Peer Mentor **Sept 2024 – Present**
Simon Fraser University Burnaby, BC

- Mentored 40+ students across 10 groups, improving grades by 10%+ for 20+ students through interactive problem-solving sessions and personalized guidance.
- Collaborated with professors and TAs to deliver aligned support, fostering a productive and engaging learning environment.

Technical skills

Languages: C/C++, Python, JavaScript (ES6), TypeScript, HTML, CSS, SQL, Rust, Haskell
Frameworks: Next.js, React, Node.js, Three.js, TailwindCSS, Pygame
Developer Tools: Git, GitHub, Firebase, Zod, PyUnit5, Leaflet, OpenSt