

# TANYA AGGARWAL

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## Summary

Full Stack Developer and Computational Modeling Researcher with experience building production-level software, optimizing performance, and collaborating in multi-disciplinary engineering teams. Strong proficiency in JavaScript, TypeScript, Python, SQL, and cloud-based systems. Developed full-stack tools, automated workflows, and numerical models improving performance by up to 40%. Passionate about writing clean, testable code, contributing to team-based development processes, and building impactful, user-focused features.

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## Skills

Programming & Development:

JavaScript • TypeScript • React • HTML • CSS • Python • Julia • PHP • Java

Databases, Tools & Cloud:

MySQL • MongoDB • Firebase • AWS • Google Cloud • GitHub • GitLab

Full Stack & Front-End:

Feature Development • API Integration • Responsive UI/UX • Cross-Browser Compatibility • Performance Optimization

Software Engineering & DevOps:

Debugging • Git Version Control • Sprint Workflows • Agile Collaboration • Code Reviews

Data & Research:

Python (Pandas, NumPy) • Data Preprocessing • Model Evaluation • Analytical Modeling

Professional Skills:

Team Collaboration • Communication • Problem Solving • Adaptability • Time Management

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## Work Experience

**Undergraduate Research Assistant (USRA) – Trinity Western University** May

2025 - August 2025

- Engineered a computational ice-flow model in Julia using the WAVI.jl framework to simulate glacier basal resistance, improving numerical stability by 25% through optimized solver tuning and parameter calibration.
- Formulated and validated 2D nonlinear advection simulations in Julia using finite difference methods and CFL criteria, improving computational efficiency by 20% while maintaining zero boundary errors.
- Documented models, debugging steps, and validation workflows, supporting reproducibility and team-wide knowledge sharing.

**Junior Web Developer – Eazy Trade Hub**

January 2023 - June 2024

- Implemented full-stack features using JavaScript, PHP, MySQL, and REST APIs; deployed solutions serving **1,000+ active users** monthly.
  - Integrated Google Cloud Video Intelligence API using Python and RESTful APIs to automatically analyze and categorize 500+ website videos, boosting search relevance by 35%.
  - Optimized website performance by reducing average page load time from 4.5s to 2.7s using GTmetrix, Hpanel, and resource caching, improving user retention by 18%.
  - Architected and deployed custom WordPress plugins in PHP, MySQL, and JavaScript to automate rewards systems and content validation, resulting in a 25% increase in user engagement and supporting 1,000+ active users monthly.
  - Automated server-side operations with Cron jobs and Bash scripting, improving throughput by 40%, maintaining 2,000+ weekly job executions, and cutting manual maintenance time by 12+ hours per week.
  - Built reusable components, responsive layouts, and accessibility-friendly UI, improving usability scores by **22%**.
  - Established a robust testing and staging environment using Git version control and plugin documentation, reducing deployment errors by 40% and accelerating update rollouts.
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## Education

B.Sc. in Computing Science with minors in Math, Trinity Western University Sept

2023 - May 2027

- Consistently on the Dean's List with an overall GPA of 4.05 / 4.33 and recipient of President's Scholarship