Thomas Vu

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Second-year CS student who builds tools and systems, with experience in web development, NLP, and low-level programming, and a strong algorithms background.

EDUCATION

University of Calgary   Calgary, AB
Bachelor of Science, Computer Science   *September 2024 — April 2028*
- Cumulative GPA: 3.7/4.0
- Recognized on Dean's List for academic excellence on 2024-2025

EXPERIENCE

Undergraduate Researcher (Machine Learning, NLP)   Oct 2025 — Present
University of Calgary   *Calgary, AB*
- Built NLP pipelines to assess text complexity in German literature using Transformers, GPT, and spaCy; automated feature extraction and evaluation.
- Used PCA and t-SNE to visualize feature space and explore clustering with KNN.
- Built a self-supervised contrastive model (PyTorch, Transformers) using lexical and perplexity features; reached 88% pairwise accuracy on 50k sentences and validated orderings on 70 hand-labeled examples.

Undergraduate Researcher (Software Engineering)   May 2025 — August 2025
Vision Research Lab, University of Calgary   *Calgary, AB*
- Built an automated PPT generator from documents and prompts with an integrated chatbot; shipped full web frontend and backend.
- Dockerized services with Dockerfiles and built serverless Python apps on AWS Lambda; optimized ffmpeg pipelines from 30 min to ≤1 min.
- Used DynamoDB and LanceDB for metadata storage and vector (semantic) search to enable fast retrieval.
- Implemented a LangGraph-based chatbot controller and React/TypeScript frontend; integrated backend APIs and chunked sentences for smooth TTS playback.

PROJECTS

Developer, Py2Cpp   github.com/Thomastienn/python2cpp
- Web application: python2cpp.vercel.app
- Python to C++ transpiler for competitive programming; converts import-free Python to readable C++ and prioritizes correctness and clarity.
- Implemented AST traversal using Python's ast to analyze syntax and semantics; added a secure CLI with path validation, size/complexity checks, and sanitized error logs.
- Added lightweight type inference and validation to catch undefined variables and type mismatches before conversion.
- Shipped a web UI, CLI, and public API; includes tests and examples to make the tool easy to use

Developer, Algebra Solver   github.com/Thomastienn/algebra-solver
- Web application: algebra-solver-nine.vercel.app
- Algebraic expression solver with a React frontend and FastAPI backend; supports step-by-step explanations.
- Core computation engine written in C++ for performance; exposed via Python bindings.
- Implemented tokenizer and parser to build expression trees for evaluation and manipulation.
- Developed algorithms for simplify/expand/factor and equation solving; verified correctness with manual test cases.

AWARDS

Calgary Collegiate Programming Contest 2025 - Division 2 (Third Place)   March 2025
- Competed in a 5-hour team-based programming contest, solving algorithmic problems using Python.
- Standings: https://ccpc25.kattis.com/contests/ccpc25d2/standings

Calgary First Year Contest 2025 (Winner)   February 2025
- Competed in a 3-hour individual programming contest, solving algorithmic problems using Python.
- Standings: https://calgaryfyc25.kattis.com/contests/calgaryfyc25/standings

SKILLS

- Languages: Python, C++, Java, TypeScript, SQL, Bash
- Frameworks: React, Next.js, FastAPI, LangGraph
- Tools/Platforms: Docker, AWS (S3, Lambda, DynamoDB), Git, Unix, PyTorch, spaCy, Transformers