

Tru Bui

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EDUCATION

Purdue University - GPA: 3.81/4.00

West Lafayette, IN

Bachelor of Science in Computer Science, Minor in Electrical and Computer Engineering

May 2027

Relevant Coursework: Database Systems, Operating Systems, Systems Programming, Computer Architecture, Data Structures and Algorithms, Analysis of Algorithms, Object-Oriented Programming, Digital System Design

PROJECTS

Multithreaded HTTP Server (C / C++)

April 2025

- Developed an HTTP Server supporting Basic Auth, CGI-bin, directory browsing, and request logging/statistics.
- Implemented iterative, thread-per-request, and thread-pool modes, handling 1K+ concurrent connections.

Custom Memory Allocator (C)

March 2025

- Implemented a malloc, free, realloc and calloc replacement using segregated free lists, block splitting, and coalescing.
- Built as a shared library compatible with LD_PRELOAD for use in unmodified programs.

SimpleC Compiler (C / Flex / Bison / x86-64)

December 2024

- Developed a compiler for the SimpleC language targeting x86-64, generating assembly via a single-pass codegen backend.
- Implemented parsing with Flex/Bison and code generation for expressions, control flow, and function calls.

Concurrent Shell (C / C++)

January 2025

- Built a POSIX-style shell in C/C++ supporting pipelines, redirection, job control, signal handling, subshells, wildcarding, and a raw-mode line editor.
- Implemented parser using Flex/Bison and process execution using fork(), execvp(), pipes, and waitpid().

EXPERIENCE

Tech4Research (C# / MySql / Azure)

Remote

Software Engineering Intern

May 2024 – August 2025

- Delivered C# backend systems on Azure Function Apps, supporting two U.S. Department of Veterans Affairs research studies that reached over 800+ Veterans with PTSD.
- Developed demographic-balanced randomization workflows in MySQL for NYU's *Together Against Overdose* study with 800+ participants.
- Built scalable, modular email microservices for PIRI (Parent-Infant Research Institute) using Azure Blob Storage templating, reaching 275K+ users.
- Engineered a Stripe-integrated payment API supporting subscriptions, carts, and one-off transactions with secure WebHooks and logging.

Purdue University (C / x86-64 / ARM)

West Lafayette, IN

Undergraduate Teaching Assistant (CS 250: Computer Architecture)

August 2025 – Present

- Teach labs for 50+ students covering ARM/x86-64 assembly, memory hierarchies, caching, branch prediction, and program execution.
- Provide debugging guidance on pipeline hazards, cache behavior, address translation, and architecture-level performance.

Purdue University (Python / Pytorch)

West Lafayette, IN

Research Assistant

January 2025 – June 2025

- Conducted large-scale benchmarking of AI image generation models on Purdue's HPC cluster to evaluate throughput, latency, output quality, and reproducibility.
- Built automated PyTorch evaluation pipelines for batch execution, reproducible experimentation, and performance scoring across distributed compute nodes.

SKILLS

Programming Languages: C, C++, Python, C#, SQL

Technologies and Tools: Linux, GCC/Clang, GDB, Valgrind, Make/CMake, Git

Cloud & Automation: Azure Functions, AWS Lambda, CI/CD (GitHub Actions, Vercel), Visual Studio

Awards and Activities

Purdue University Dean's List (Fall 2023 – Spring 2025)

Purdue University Semester Honors (Fall 2023 – Spring 2025)

Lincoln High School Valedictorian (Class of 2023)

Purdue Taekwondo Club, 4th-Degree Black Belt, National Competitor & Instructor (4 yrs); certified Master by Kukkiwon