

Timothy Choi

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Education

The University of Adelaide

Bachelor of Mathematical and Computer Sciences GPA: 6.33/7

Adelaide, Australia

Feb 2022 – Nov 2027

Technical University of Munich

Informatics (Exchange)

Munich, Germany

Apr 2024 – Jul 2025

Experience

Susquehanna International Group

Software Development Intern

C++23, Kernel Bypass, Boost, Assembly

Sydney, Australia

Nov 2025 – Feb 2026

- Created a tool to send Ethernet frames with 9 nanosecond precision and a throughput of over 4 million packets per second
- Utilized my knowledge of C++ compilation to enable aggressive inlining while maintaining readability and run-time flexibility
- Resolved decade-old UB which caused invalid UDP/IP checksums in a third-party kernel bypass library
- Creating a framework with support for multiple market data formats while maintaining strong typing and code deduplication
- Creating an order book builder with a fenwick tree to support seeking to any arbitrary timestamp in $O(\lg n)$ time and $O(n \lg n)$ space
- Creating an ncurses front-end for viewing and validating simultaneous market data streams

Dassault Systèmes

Software Engineer (part-time)

C++20, Jira, BitBucket, Jenkins, Python, Rust

Munich, Germany

May 2024 – Mar 2025

- Refactor legacy C++ codebase using the plmpl paradigm, enhancing backward compatibility and reducing code size by over 50%
- Enhance internal debugging tools by designing a more intuitive graphical user interface in C++, improving usability and efficiency
- Parse specification files with Python to generate over 2000 comprehensive testcases to ensure there are no regressions
- Optimize development workflows with Rust, achieving up to a 90% reduction in task times such as compilations

Global Technology Integrator

System Engineer

Batch, Windows AD, Project Management

Hong Kong

Aug 2021 – Nov 2021

- Leading a team of 4+ people, spearheaded the automation and parallelization of our tasks such as registry modification
- Helped resolve our staff shortage by reducing the manpower and time required by ~200%, and in so doing beating the deadline
- Mentored new staff, helping a non-technical audience understand the the basics of Windows AD and Batch scripting

Projects

Open Source Contributions (over 1 million users)

Rust

Rust, Standard Library

github.com/rust-lang/rust

- [std][BTree] Fix behavior of `::append` to match documentation, `::insert`, and `::extend` (#145628)

LLVM

C++, Compiler Infrastructure, Semantic Analysis

github.com/llvm/llvm-project

- [libc++] Improve `std::filesystem::path::lexically_relative` runtime by up to 40% by avoiding string reallocation (#152964)
- [clang] Add diagnostic when scoped enumeration requires an explicit conversion for binary operations (#152698)
- [clang] Remove 14+ years old redundant check for scoped enums in shift operators (#152865)

Web Apps (1000+ users)

Binary Search on Color

Algorithm Design, JavaScript

tinnamchoi.github.io/projects/bsoc

- Devised an algorithm that allows people to search the modern color space of over 16 million colors in just 24 clicks
- Inspired by the lack of precision in existing tools, providing a better imagination to reality interface

Negative Base Converter

Math, Number Theory, JavaScript

tinnamchoi.github.io/projects/nbc

- Created a converter for negative base numeral systems by researching the mathematical principles behind it
- Motivated by the lack of existing tools, providing beginners with a better understanding of negative bases

Mobile Apps (3000+ downloads)

tmtLauncher

Kotlin

f-droid.org/en/packages/com.tinnamchoi.tmtlauncher

- Minimalist, suckless, efficient Android launcher. Sponsored on GitHub!

Others

Block Model Compression Algorithm

C++, Algorithm Design, Linux

tinnamchoi.github.io/projects/bmca

- Developed an octree-based algorithm in C++ to efficiently compress 3D data in $O(N \log_8 N)$, optimizing storage and processing

Volunteering

Adelaide Competitive Programming Club

Problemsetter

C++, Rust

Australia and New Zealand

Feb 2025 – Oct 2025

- Creating and testing competitive programming problems for AllUni (alluni.io) and AUCPL (aucpl.com)
- Competitive programming contests created in collaboration with 20 student clubs across 7 cities in Australia and New Zealand
- Prize pools of \$5,000 and \$2,400 sponsored by Susquehanna (SIG), Jane Street, Citadel, and IMC

Skills

Human languages: English (native), Cantonese (native), Mandarin (C1), German (A2)