

Jacob Hinchliffe

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Professional Summary

Third-year MSci Mathematics and Computer Science student at the University of Birmingham, specialising in systems programming, low-level software development, and applied cryptography. Designs and builds non-trivial systems in C, Zig, and Rust, including a cross-platform end-to-end encrypted clipboard manager and a custom ISA with a full toolchain. Experienced Linux systems administrator comfortable at every layer of the stack.

Education

University of Birmingham | Birmingham

2028

MSci Mathematics and Computer Science with Industrial Year

- GPA: First Year Average 74%; Second Year Average 74%
- Relevant Coursework: Functional Programming (91%), Data Structures & Algorithms (84%), Statistics (77%), Object Oriented Programming (77%), Security & Networks (76%)

New College Pontefract | Pontefract

2024

A-Levels in Mathematics, Computer Science, and Economics

- AAB in Mathematics, Computer Science, and Economics. Twice awarded Student of the Month in the Mathematics department.

Skills

Languages: C, Zig, Rust, Java, JavaScript, HTML, CSS

Systems & Networking: Linux, Postfix, Dovecot, rspamd, PostgreSQL

Tools: Git, CMake, Docker, Docker Compose, LaTeX

Other: FFI bindings, Safe wrapper authoring

Projects

zclip (WIP) — Zig, WinAPI, Wayland, Desktop Apps, Cryptography

[\[Repo\]](#)

- Engineered a cross-platform clipboard management tool in Zig spanning approximately 7,000 lines of code, with cross-device synchronisation and end-to-end encryption using the Noise IK pattern, as used by WireGuard.
- Designed a daemon and client communicating via msgpack-encoded messages over a UNIX socket, with compatibility on Windows.
- Integrated sqlite3 as the DBMS for peer management, storing daemons and their associated public keys.
- Authored two self-maintained dependencies, clipboard-zig and parseargv, each with unit tests and separate documentation.

Damn Simple Architecture — Rust, ISA Design, LaTeX

- Designed a MIPS-style RISC load/store ISA with fixed-width instructions and straightforward encodings.
- Documented the complete architecture specification in LaTeX for technical clarity.

zcry — Zig, Windows API, Cryptography

[\[Repo\]](#)

- Developed a 64-bit Windows PE crypter in Zig, featuring a cross-platform toolchain.
- Integrated a Proof-of-Work (PoW) key derivation mechanism to strengthen security against automated analysis.
- Authored and adapted several low-level C library wrappers (FFI) to support system-level execution.

Simple Text Editor — C, ncurses, CMake

[\[Repo\]](#)

- Developed a terminal-based text editor in C using CMake as the build system.
- Leveraged the ncurses library to implement an interactive terminal user interface.
- Implemented features for tracking file metadata, line wrapping, and dynamic file management.