

Jack Bond-Preston

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EDUCATION

University of Bristol

BSc Computer Science (*First Class Hons*)

Bristol, UK

2017 — 2020

- Won award for best second year software engineering group project.

WORK EXPERIENCE

Senior Software Engineer

2023 — Present

Arm

Cambridge, UK

- Contributing to HPC/AI infrastructure software: Collective Communications Library (CCL) [C++20] and PyTorch [C++17, Python]. Designing and implementing new features, investigating and improving performance, improving testing and infrastructure, code review leadership.
 - Special focus on heterogenous hardware and NUMA zones/memory management. Including investigations into ACPI HMAT, NUMA-aware allocators, hugepage-backed allocation strategies.
- Contributing to the open source Data Plane Development Kit (DPDK) project [C], including making large performance improvements to the OpenSSL Poll-Mode Driver (PMD) - as well as changes to OpenSSL itself [C, AArch64 asm]. Maintainership of several minor components (Bitops, Ticketlock, Armv8 Crypto PMD).
 - Coordinating collaboration between IAS and Secure Libraries teams, helping to ensure enablement of competitive IPSec performance on Arm platforms.
- Technical mentorship for graduate engineers and new joiners.

Software Engineer

2022 — 2023

AMD

Cambridge, UK

- Contributing to AMDs transparent, ultra-low-latency, kernel-bypass network stack - Onload [C].
 - Performance optimisation and benchmarking/profiling work.
 - Improvements, debugging, and bug fixes for teaming/bonding support.
 - Extending and modernising internal automated tests.
 - Direct communication with customers to understand and help resolve issues.

Graduate Software Engineer

2021 — 2022

Arm

Cambridge, UK

- Porting musl C library to the new prototype Morello (CHERI) platform [C, AArch64 asm].
 - Ported larger components of the C library, including the memory allocator and POSIX threads. Considered security and hardening against memory safety bugs at every stage of design and implementation.
 - Created a minimal test distribution of Linux for use on an Arm Fixed Virtual Platform, with the ability to run userspace applications in pure-capability mode. This provided the framework for adding FVP-based testing to the CI pipeline (alongside existing emulator-based testing) for further proof of functionality.
 - Liaised with multiple teams to ensure coordination between libc, kernel ABI, compilers and debuggers.

PRESENTATIONS

[OpenSSL Crypto PMD - Analysis and Optimisations](#)

DPDK Summit 2024

LANGUAGES

- **English:** Native
- **Mandarin Chinese:** HSK 5 (2026)

SKILLS

- **Programming Languages:** C, C++20, Python, assembly (AArch64, x86-64)
- **Debugging and Analysis:** Linux perf, gdb, rr, flamegraphs, Wireshark
- **Computer Architecture:** AArch64 Architecture, Arm CoreLink Interconnects, PCIe, Heterogeneous Systems
- **Software Engineering:** Python, Git, Gitlab, Gerrit, Linux, Shell Scripting, Agile, Jira