

Jack Bond-Preston

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EXPERIENCE

Arm Ltd.

Cambridge, UK (Hybrid)

Software Engineer in Infrastructure Application Solutions group

2023–Current

- Contributing to the open source DPDK (Data Plane Development Kit) project (using C), including making large performance improvements to the OpenSSL PMD (Poll-Mode Driver) - as well as changes to OpenSSL itself (using C and arm64 assembly).
- Research and implementations in the area of HPC/AI infrastructure/networking, especially RDMA and memory management on heterogeneous memory systems - comprising work on projects including PyTorch (using C++ and Python), Gloo (using C++).
- Coordinating collaboration between IAS and Secure Libraries teams, helping to ensure enablement of competitive IPsec performance on Arm platforms.
- Technical mentorship for graduate engineer.
- Code reviews across multiple projects including DPDK [C], PyTorch [C++, Python], OpenSSL [C, arm64 assembly], VPP [C], Snort3 [C++].
- Knowledge sharing documents and presentations, especially around OpenSSL performance work and heterogeneous memory management.

AMD (formerly Xilinx / Solarflare)

Cambridge, UK (Hybrid)

Software Engineer in Adaptive and Embedded Computing Group

2022–2023

- Developing AMDs transparent, ultra-low-latency, kernel-bypass network stack - Onload - using C.
- Performance optimisation and benchmarking/profiling work.
- Improvements, debugging, and bugfixes for teaming/bonding support.
- Extending and modernising internal automated tests

Arm Ltd.

Cambridge, UK (Hybrid)

Graduate Software Engineer in Open Source Software Group

2021–2022

- Porting low-level software to the Morello (CHERI) platform.
- Produced patches as part of a project porting the open-source C standard library implementation musl to a new prototype platform (using C and arm64 assembly).
- 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.

SKILLS

- **Programming Languages:** C, C++, Python, Assembly (x86-64 and AArch64)
- **Debugging and Performance:** Perf, GDB & LLDB, rr, Flamegraph, Wireshark
- **Architecture:** Arm Architecture, Arm Standard Interconnects, PCIe, Heterogeneous Systems
- **Build Systems:** GNU Make, CMake, Meson
- **Software Engineering:** Python, Git, Gerrit, Linux, Shell Scripting, Agile, Jira

EDUCATION

University of Bristol
BSc in Computer Science (1st Class Hons)

Bristol, UK
2017–2020

PRESENTATIONS

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

Online Presentation
October 2024

- Submitted and delivered a talk on my work optimising DPDK's OpenSSL Poll Mode Driver (PMD), along with potential future work and points requiring community coordination.
- Fielded and answered numerous questions from community members.

LANGUAGES

- **English:** Native
- **Mandarin Chinese:** HSK 3 (2024)
- **German:** CEFR A2 (2020)