

# Jack Frankland

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**Personal Profile** Senior Compiler Engineer working on MLIR based technologies to accelerate machine learning workloads.

**Education** **MPhys Mathematical Physics - First Class with Honours** 2014 - 2018  
University of Edinburgh, Edinburgh, UK.  
MPhys thesis in stochastic modeling for simulations in lattice field theory.

**Work Experience** **Arm - Senior Software Engineer** 2023 - present  
Worked in machine learning group on various compiler technologies:

- Contributed to the Apache TVM open source machine learning compiler framework where I investigated scheduling optimizations to generate SVE vector instructions.
- Implemented an LLVM MLIR based compiler producing SPIR-V shaders for GPU execution. This involved developing an out of tree custom dialect to represent shader execution graphs and designing an API to expose generated code to clients.
- Attended “Practical Deep Learning” and “Expert Product Development with Python” courses from Doulos.
- Acted as deputy tech lead, attended architect workshops and introduced inclusive best practices within team.

**Codeplay - Software Engineer** 2018 - 2023  
Worked on various areas of software stack required to implement open compute standards such as OpenCL, Vulkan and SYCL:

- Worked extensively with OpenCL; contributing to Khronos projects such as the OpenCL-CTS and spec; designing and implementing the cl\_khr\_command\_buffer extension; authoring an IWOCL 2022 talk and participating in working group calls.
- Developed and maintained low level libraries used to build open compute standards.
- Worked with the LLVM compiler infrastructure project to implement middle end compiler passes for compute kernels and a compiler backend to target an accelerator device.
- Member of D&I group, mentored new starts, acted as deputy project lead and attended leadership skills and presentation skills courses.

**Key Skills** C++, C, CMake, Python, LLVM, MLIR, OpenCL, Vulkan, GTest, Catch2, Git, Jenkins, Gitlab CI, Docker, Unix/Linux tools and systems, Agile methodologies.