

David Wood

Software Engineer · Edinburgh, Scotland · hello@davidtw.co · <https://davidtw.co> · [@davidtwco](https://twitter.com/davidtwco)

Open Source

Rust Programming Language

Compiler Team Co-Lead

Aug 2023 - Present

In collaboration with my compiler team co-lead, I'm responsible for representing the Rust compiler team; owning the compiler team's decisions; making unilateral approval for trivial or urgent issues; driving the team's weekly meetings; communicating with other members of Rust leadership; authoring communication on behalf of the team; and supporting compiler team members in their contributions.

Since becoming co-lead, I have created a roadmap for my term as co-lead based on team member feedback, landed an RFC to restructure the compiler team, improved review queue capacity, and written about the team's ongoing work, review queue, and the project's structure.

Rust Programming Language

Compiler Team Member

Oct 2017 - Present

As member of the Rust compiler team, I am responsible for the implementation and maintenance of the Rust compiler, which involves having merge privileges; being assigned patches to review; fixing high-priority bugs; and reviewing backports, major change proposals and compiler RFCs.

I regularly contribute bug fixes, diagnostic improvements and refactorings; as well as lead or contribute to engineering efforts to implement new features in the Rust compiler. Since starting to contribute to Rust, I have been involved in various working groups, including: `async/await`, `diagnostics`, `debuginfo`, `meta`, `polymorphization` and `non-lexical lifetimes`.

Work Experience

Huawei Technologies Research & Development UK Ltd.

Senior Software Engineer A (Grade 17), Programming Languages Lab

Edinburgh, Scotland

November 2022 - Present

I am the foremost Rust expert within the Central Software Institute of Huawei R&D, leveraging my Rust experience to accelerate and guarantee Rust's successful adoption, this involves:

- contributing to the upstream Rust compiler, prioritising features and bugs which impact Huawei's business units
- directly working with internal customers to recognise Rust opportunities, advising and assisting teams adopting Rust, and identifying and prioritizing requirements for upstream contributions
- supporting HQ colleagues in maintaining our internal toolchain
- internal knowledge sharing on compiler internals
- participating in Huawei's Technical Management Committee to define internal coding standards for Rust
- internally representing the Edinburgh Research Centre within Huawei by promoting our work in company publications and presenting to leadership from other parts of the organisation
- externally representing Huawei by speaking at international conferences and attending as a sponsor

Within Huawei's internal programming language projects I have lead planning and implementation of constant evaluation and contributed to the implementation of automatic differentiation.

I've been awarded Huawei's "President Award of the 2012 Laboratories", "President's Award of the European Academy", "Gold Team Award", "Innovation Spark Award", and "Future Star" awards. I have qualified for and earned an internal "Competency & Qualification" grade in Compilers & Operating Systems at Level 5 (pre-requisite to Grade 20).

Huawei Technologies Research & Development UK Ltd.

Senior Software Engineer B (Grade 16), Programming Languages Lab

Edinburgh, Scotland

Aug 2021 - Nov 2022

Codeplay Software Ltd.

Senior Software Engineer, Infrastructure

Edinburgh, Scotland

Nov 2020 - Aug 2021

I was the primary maintainer of Codeplay's continuous integration infrastructure and led the effort to rebuild the core infrastructure with NixOps to improve reproducibility.

In addition, I worked as a compiler engineer on SYCL support for NVIDIA GPUs which was contributed to Intel's DPC++. I implemented driver support in Clang for the `nvptx64-nvidia-nvcl-sycldevice` target, target-specific passes in LLVM, builtins in libclc, and various bug fixes to LLVM, Clang and the LLVM-SPIRV translator.

Codeplay Software Ltd.
Software Engineer, Infrastructure

Edinburgh, Scotland
Sep 2017 - Nov 2020

Scottish Engineering
Software Consultant

Glasgow, Scotland
Sep 2018 - Nov 2018

Codeplay Software Ltd.
Intern Build Engineer

Edinburgh, Scotland
May 2017 - Sep 2017

I rebuilt the entirety of Codeplay's continuous integration infrastructure in my internship - introducing automated re-provisioning of Ubuntu, CentOS and Windows build nodes and improving the configuration management, vastly reducing the turn-around time of changes requested by engineering teams and downtime which impacted engineering team productivity.

West Dunbartonshire Leisure
Software Consultant

Alexandria, Scotland
Apr 2015 - Feb 2017

Polaroid Eyewear
Software Consultant

Dumbarton, Scotland
Jun 2014 - Jun 2016

Education

University of Glasgow
MSci Software Engineering with Work Placement, Honours of the First Class

Glasgow, Scotland
Sep 2015 - Jun 2020

I graduated with a GPA of 20.0 (out of a maximum 22.0) and completed my MSci project on "[Polymorphisation](#)", a code-size optimisation in the Rust compiler to reduce unnecessary monomorphisation during code generation. In my first year, I was awarded "Best Computing Science Student Intending Single Honours" and in my final year, "Most Outstanding Project in MSci SE WP".

In my third year, I worked in a team tasked with creating a [event-sourced financial platform for Avaloq](#), a banking software company. For the duration of the project, I managed and led development on key components of the project, written in Rust and mentored other team members in fixing bugs and building features in unfamiliar technologies.

Glasgow Caledonian University
Nuffield Foundation Placement

Glasgow, Scotland
May 2014 - Jul 2024

While on a summer placement at Glasgow Caledonian University, I implemented a [colour-based tracking algorithm](#) from a research paper in C++ with OpenCV which was capable of full 360 tracking of multiple objects simultaneously including when the object leaves and re-enters the frame.

Vale of Leven Academy
Secondary Education

Alexandria, Scotland
Aug 2009 - May 2015

Memberships

Open Source Initiative
Individual Membership

Feb 2020 - Present

Conference Speaking

QCon
Split DWARF in rustc

Shanghai, China
Nov 2022

Published Articles

Inside Rust Blog
[Contribute to the diagnostic translation effort!](#)

Aug 2022

Inside Rust Blog
[Improving `async-await's Future is not Send` diagnostic](#)

Oct 2019