Alex Usher

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EDUCATION

Imperial College London   London, UK
Master of Engineering in Computing, First Class.   *September 2019 – June 2023*

Trinity College London   London, UK
Associate's Diploma in Music Performance, Distinction.   *July 2017*

PUBLICATIONS

– A.F. Donaldson, D. Sheth, J. Tristan, A. Usher. (2024). *Randomised Testing of the Compiler for a Verification-Aware Programming Language.* DOI: 10.1109/ICST60714.2024.00044

EXPERIENCE

Software Development Engineer, L5   February 2025 - Present
Amazon, Prime Video Financial Systems   *London, UK*
- Worked with stakeholders to identify and propose a solution for having calculated royalty for fraudulent transactions, mitigating over $2MM/year in controllership risk.

Software Development Engineer, L4   October 2023 - February 2025
Amazon, Prime Video Financial Systems   *London, UK*
- Designed and maintained components for SOX-compliant, serverless royalty calculation systems processing over $7B revenue annually.
- Identified and fixed numerous long-standing issues causing royalty calculation to fail, releasing over $14MM of revenue (globally) downstream to be paid to clients and studios.
- Proposed innovative tooling solutions, reducing manual operational effort by 200 hours/year while improving compliance and auditability.

Software Development Engineer Intern   April 2022 - September 2022
Amazon, Prime Video Technology   *London, UK*
- Designed, implemented, scaled and released a cache on a 500k+ TPS request flow between two tier-1 services.
- Reduced traffic to one of the team's tier-1 services by 90%, saving the team over $5M/yr in public AWS costs.

PROJECTS

dialin.ai | *Python, GenAI, Kotlin, Azure*   June 2024 - Present
- Designed, implemented & deployed a scalable, serverless workflow for ingesting podcasts from selected sources.
- Created a data pipeline for transcribing and diarising conversational audio.
- Optimised the audio processing stack to achieve a 60% price reduction over public cloud alternatives.

fuzz-d | *Kotlin, ANTLR, Dafny*   November 2022 - September 2023
- Created a fuzzer for the Dafny compiler, randomly generating valid Dafny programs over a set of features.
- Implemented an interpreter as a reference oracle for testing and reducing Dafny programs.
- Detected 35 issues in the Dafny language, resulting in 15 bug reports to the developers.
- Applied novel mutation testing techniques to analyse fuzzing effectiveness.
- Presented findings in a peer-reviewed paper at ICST 2024 and awarded the distinguished industry paper prize.

WebGPUniverse | *ReactJS, Firebase, WebGPU, WGSL*   November 2021 - January 2022
- Collaborated in a group of seven to develop an online sandbox for the new WebGPU graphics API.
- Implemented render pipelines to support a range of mesh types, including 3D and user-defined 2D meshes.
- Challenged by a lack of documentation, little browser support and evolving WGSL language specifications.

TECHNICAL SKILLS

Most Experienced: Java, Kotlin, Python, TypeScript, ReactJS, SQL
Some Experience: Scala, Haskell, NodeJS, C, C++, C#
Tools & Frameworks: Git, AWS, Azure, Terraform, Firebase, Docker, ANTLR, Spring DI

NOTABLE ACHIEVEMENTS

Distinguished Industry Paper Award | *ICST Conference*   June 2024
Dean's List (Year 4) | *Imperial College London*   August 2023
Minimax Labs Project Prize | *Imperial College London*   August 2023
David Howarth Prize | *Imperial College London*   June 2022