Uma **Zalakain**

Computer Scientist · Software Developer

Glasgow

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functional programming, compilers, programming language theory, concurrency theory

Internships and Professional Experience

ITV PLC — *London*

Scala Engineer — *April 2022 - present*

Functional programming for ITV Shows & News Backend

Microsoft Research Cambridge — *Cambridge*

Research Intern — *2021*

Types and Type Changing Operations for Distributed Data Structures

University of Edinburgh — *Edinburgh*

Research Assistant — *2021*

RISE: a functional pattern-based data-parallel language (`rise-lang.org`)

Academic Qualifications

University of Glasgow — *Glasgow*

PhD Computing Science, interrupted — *2019 - April 2022*

Machine verification of typed process calculi.

University of Glasgow — *Glasgow*

MSc Computing Science · **with Distinction** — *2018 - 2019*

University of Strathclyde — *Glasgow*

BSc Hons Computer Science · **First class honours** — *2014 - 2018*

Awarded Andrew McGettrick prize for **outstanding performance** throughout the degree (2 recipients).

Articles, Talks and Publications

Co-Contextual Typing Inference for the Linear π-Calculus in Agda — [extended abstract]

(Extended abstract) Uma Zalakain, Ornela Dardha — [presentation recording]

Extended abstract at Workshop on Type-Driven Development (TyDe) 2021

π with leftovers: a mechanisation in Agda — [published version]

Uma Zalakain, Ornela Dardha — [presentation recording]

In Proceedings of Formal Techniques for Distributed Objects, Components, and Systems (FORTE) 2021

Type-Checking Session-Typed π-calculus with Coq — [thesis]

Uma Zalakain, supervised by Ornela Dardha

MSc Thesis, University of Glasgow, 2019

Evidence-Producing Problem Solvers in Agda — [thesis]

Uma Zalakain, supervised by Conor McBride

BSc Thesis, University of Strathclyde, 2018

Research Activities

2021 **PLACES** PC member
2021 **TyDe** sub-reviewer
2021 **PLDI Artifact Evaluation Committee** PC member
2021 **ICE** PC member

Invited Talks and Participations

Theorem Proving with Dependent Types in Agda

Formal Analysis, Theory & Algorithms Seminar, 2021

An Introduction to Session Types

Mathematically Structured Programming 101 Seminar, 2020

Mechanising the Linear π-Calculus

Languages, Systems, and Data Seminar, 2020

π with leftovers: a mechanisation in Agda

- Programming Languages at the University of Glasgow, 2020
- Verification of Session Types, 2020
- Agda Implementors' Meeting XXXII, 2020

Machine Verification with Agda

Seminar series at the UoG, 2020

Type-checking session-typed π-calculus with Coq

- BehAPI – student talks, Leicester, 2019
- SPLV – student talks, Glasgow, 2019

Tutoring and Co-Supervision

Co-supervision of MSc theses

- Empirical study of mechanised session types, *Di Cheng*, 2021
- Typed Operations on Distributed Data Structures, *Peng Zhao*, 2021
- Encoding session types into the linear pi-calculus in Agda, *Yuan Gao*, 2021

Co-supervision of BSc theses

- Encoding session types into the linear pi-calculus in Agda, *Patryk Kaczmarczyk*, 2020
- Abalone in Haskell, *Jing Lee*, 2020

Tutoring

- CS1P, first year programming, 2021
- CS1CT, introduction to computational thinking, 2020

Language Skills

Basque native language
Spanish native language
English fluent
Dutch intermediate
Italian beginner

Skills

Programming Languages Agda, Scala, Haskell, Coq, Python, JS, Java, Rust, C, LaTeX
Sysadmin NixOS & GNU/Linux administration, Bourne shells, Git