Uma **Zalakain**

COMPUTER SCIENTIST · SOFTWARE DEVELOPER

Glasgow

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Programming language theory, concurrency theory, machine verification, type theory.

Academic Qualifications

University of Glasgow   *Glasgow*

PHD COMPUTING SCIENCE   *2019 - present*

Thesis title: Machine verification of typed process calculi.
Supervisor: Ornela Dardha.

University of Glasgow   *Glasgow*

MSC COMPUTING SCIENCE · WITH DISTINCTION   *2018 - 2019*

Thesis title: Type-checking session-typed π-calculus with Coq.
Supervisor: Ornela Dardha.

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).
Thesis title: Evidence providing problem solvers in Agda.
Supervisor: Conor McBride.

Unpublished Work

π with leftovers: a mechanisation in Agda   [paper link]

MECHANISING A π-CALCULUS WITH LINEAR, SHARED, AND GRADED TYPES USING LEFTOVER TYPING.   [code link]

Professional Experience

University of Edinburgh   *Edinburgh*

RESEARCH ASSISTANT   *2021 - present*

• Worked on the Scala implementation of the RISE compiler (`rise-lang.org`)

University of Glasgow   *Glasgow*

LAB DEMONSTRATOR   *2018 - present*

• Demonstrated Theory of Computation
• Tutored Introduction to Programming
• Marked Java Programming
• Demonstrated Programming Languages

University of Strathclyde   *Glasgow*

LAB DEMONSTRATOR   *2017 - 2018*

• Demonstrated User and Data Modelling
• Demonstrated Programming Foundations

TextLab *Glasgow*

WEB DEVELOPER & TEXT ANALYST *2016 - 2018*

Joint research project between the English and Computer Science departments at Strathclyde.
- Developed a small Haskell library that parses and analyses the TEI-encoded texts provided by the Folger Shakespeare Library
- Developed an evolving static website that publishes the analyses carried out together with English students (see `losp.us`)
- Collaborated in meetings with the staff from the Folger Shakespeare Library in Washington, D.C.

A2H Software Factory *Donostia*

SOFTWARE DEVELOPER *2014 - 2016*

- Developed small web applications for internal company usage
- Developed a content publishing system focused on third-party integration
- Developed a data extraction and visualization library

GISA Elkartea *Errenteria*

DEVELOPER & ASSOCIATE *2010 - present*

Non-profit organization for the promotion of libre software.
- Developed multiple libre web applications for a local radio station
- Translated multiple libre Android applications to Basque

Talks and Presentations

2021	**Theorem Proving with Dependent Types in Agda** Formal Analysis, Theory & Algorithms Seminar	*U. of Glasgow*
2020	**An Introduction to Session Types** Mathematically Structured Programming 101 Seminar	*U. of Strathclyde*
2020	**Mechanising the Linear π-Calculus** Languages, Systems, and Data Seminar	*U. of California*
2020	**π with leftovers: a mechanisation in Agda** Programming Languages at the University of Glasgow	*U. of Glasgow*
2020	**π with leftovers: a mechanisation in Agda** Verification of Session Types	*U. of Glasgow*
2020	**π with leftovers: a mechanisation in Agda** Agda Implementors' Meeting XXXII	*Online*
2020	**Machine Verification with Agda** seminar series at the UoG	*Online*
2019	**Session-typed π-calculus, Coq, and linearity as a predicate** SPLV – student talks	*Glasgow*
2019	**Type-checking session-typed π-calculus with Coq** BehAPI – student talks	*Leicester*
2018	**Intro to functional programming in Haskell** HackMeeting	*Malaga*
2016	**GPG: Una introducción** Jornadas de Conocimiento Libre	*Madrid*

PC Membership and Events

2021	**PLDI Artifact Evaluation Committee** PC Member	*Online*
2021	**Interaction and Concurrency Experience Committee** PC Member	*Online*

Participation

2020	**Linearity/TLLA**	*Online*	2019-	**PLUG series**	*Glasgow*
2020	**DiSCoTec**	*Online*	2019	**SPLV**	*Glasgow*
2020	**PLDI**	*Online*	2019	**BehAPI**	*Leicester*
2020	**Verification of Session Types**	*Online*	2019	**MirageOS retreat**	*Marrakech*
2020	**Agda Implementors' Meeting**	*Online*	2018	**Hackmeeting**	*Malaga*
2020	**Chalmers FP series**	*Online*	2018	**ICFP**	*St Louis*
2020	**Coq Andes Summer School**	*Santiago*	2016	**EuroPython**	*Bilbao*
2019-	**MSP101 series**	*Glasgow*			

Honors & Awards

2018	**Andrew McGettrick prize for outstanding performance** University of Strathclyde (**£400**)	*Glasgow*
2017	**Best overall third year student** Baillie Gifford (**£200**)	*Glasgow*
2014–2017	**Dean's Certificate for excellent results** University of Strathclyde	*Glasgow*
2014	**Winner of the Bloomberg challenge** StrathHack	*Glasgow*

Skills

Programming	Agda, Coq, Haskell, Scala, Python, JS, Java, Rust, C, LaTeX
Sysadmin	NixOS & GNU/Linux administration, Bourne shells, Git
Web	Django, HTML5

Language Skills

Basque	native language
Spanish	native language
English	fluent (speaking, reading, writing)
Dutch	intermediate (speaking, reading); basic (writing)
Italian	basic (reading)
French	basic (speaking)

Software Tools

Presburger solver	verified solver for Presburger arithmetic in Agda
NetSim	simulator for synchronized periodic exchanges of distance vectors across a network
ADTrees	modelling and evaluation of attack-defense trees
Juktz	a statically typed imperative language and its interpreter
Lightweight-motion	RPi-ready motion detection for USB and HTTP(S) cameras