

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: Ornella Dardha.

University of Glasgow

Glasgow

MSC COMPUTING SCIENCE · **WITH DISTINCTION**

2018 - 2019

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

Supervisor: Ornella 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Unpublished Work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

WEB DEVELOPER & TEXT ANALYST

Glasgow

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

SOFTWARE DEVELOPER

Donostia

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 Elkarteia

DEVELOPER & ASSOCIATE

Errenteria

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