

# Scottish Programming Languages and Verification Summer School 2019

Robert Atkey    Clemens Kupke    Fredrik Nordvall Forsberg

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The inaugural Scottish Programming Languages and Verification Summer School was held at the University of Strathclyde 5–9 August 2019.

## 1 Programme

The school featured an invited course, two core courses taken by all participants, as well as four specialised courses from which participants could choose according to their interests. There were also fifteen lightning talks given by the participants.

### Invited course

- Chung-chieh Shan (Indiana University): Probabilistic programming

### Core courses

- Philip Wadler (University of Edinburgh): Programming Language Foundations in Agda
- Neil Ghani (University of Strathclyde): Category Theory

### Specialised courses

- Greg Michaelson and Rob Stewart (Heriot-Watt University): Domain-specific languages
- Chris Brown (University of St Andrews): Parallel Programming
- Ornela Dardha (University of Glasgow): Session types
- Conor McBride (University of Strathclyde): Dependently Typed Programming

### Lightning talks

- Philip Wadler (University of Edinburgh): Functional Compiler Engineer
- Cristian Urlea (University of Glasgow): Efficient FPGA Cost-Performance Space Exploration Using Type-driven Program Transformations

- Christopher Goes (Tendermint/Cosmos-Cryptium Labs): Juvix: Efficient dependently-typed smart contracts
- Xiaomo Yao (KTH Royal Institute of Technology): Towards the Synthesis of Provably Secure Programs
- Adriaan Leijnse (Universidade NOVA de Lisboa): Purely functional distributed programming
- Alasdair Lambert (University of Strathclyde): Open Games
- Yutaka Nagashima (Czech Technical University in Prague): Automating Induction in Isabelle/HOL with DSLs
- Georgy Lukyanov (Newcastle University): Formalising Free Selective Functors in Coq
- Arved Friedemann (Swansea University): Using Automated Reasoning for Problems in Machine Learning
- Philippa Cowderoy: Information Awareness is Super Effective!
- Stefan Zetsche (University College London): Automated Black-Box Verification of Networking Systems
- Uma Zalakain (University of Glasgow): Type-checking session-typed pi-calculus with Coq
- Oliver Westphal (University of Duisburg-Essen): A specification language for automated testing of teletype IO programs
- Nachiappan Valliappan (Chalmers University): Simple Noninterference by Normalization

## Excursion

On the Wednesday afternoon, we went by coach to Trossachs Pier at Loch Katrine, where there was the possibility to go for a walk along the lochshore, climb nearby Ben A'an, or go on a steamboat ride on the loch. Afterwards we had an excursion dinner at the Venachar Lochside restaurant.

## 2 Lecture materials

Lecture materials for all courses and slides for the lightning talks can be found on the school website: <http://www.macs.hw.ac.uk/splv/splv19/>.

## 3 Attendance

There were 62 registered participants: 26 students from SICSA institutions (4 Heriot-Watt University, 6 University of Glasgow, 7 University of Edinburgh, and 9 University of Strathclyde), 20 students from elsewhere (6 UK, 4 Sweden, 1 Czech Republic, 1 Israel, 2 Germany, 1 Slovenia, 1 Denmark, 1 Japan, 1 Bulgaria, 1 Hungary, and 1 Portugal), 5 academic non-students (1 USA, 1 China, 2 UK, and 1 Portugal), and 11 participants from industry.

## 4 Sponsorship and budget

The school was generously sponsored by SICSA (covering registration fees for Scottish PhD students), and partially supported by James Cheney's ERC grant Skye [grant no 682315] (covering the invited course) and the UK Manycore Network (covering the costs of the local lecturers).

The total budget for the school was around £11,000. Accounts are not finalised yet, but we expect to make a profit of about £500.

## 5 Student satisfaction

After the summer school, we asked the students for feedback. We received 24 responses, with 92% responding that they were satisfied or very satisfied with the school.

