

Preface to special issue: behavioural types

SIMON J. GAY[†] and ANTÓNIO RAVARA[‡]

[†]*School of Computing Science, University of Glasgow, United Kingdom*
Email: Simon.Gay@glasgow.ac.uk

[‡]*Departamento de Informática, Universidade Nova de Lisboa, Portugal*

Received 14 February 2014

Dedicated to the memory of Kohei Honda.

This is the second part of a two-part special issue on Behavioural Types, which has its origin in a workshop we organized in April 2011, in Lisbon. The aim of the workshop was to bring together the active and expanding community of researchers using type-theoretic approaches to describe and analyse behavioural aspects of software. A particular concern of this field is the identification and description of structured communication in concurrent and distributed systems, but behavioural typing also addresses issues of liveness, fairness, deadlock-freedom, security, observable equivalence, and tpestate.

The call for papers attracted an impressive number of submissions, which were each reviewed by three referees in order to make a selection for the special issue. After a further round of reviewing of revised versions of the papers, the final result is a collection of nine excellent articles spread across two issues.

In December 2012, our community was shocked by the unexpected death of Kohei Honda. Kohei was the originator of session types, which are a central part of the field of behavioural types, and was one of the most active, influential and inspiring researchers in the field. We dedicate this special issue to Kohei's memory.

Papers in this issue

- *Linear Logic Propositions as Session Types*, by Luís Caires, Frank Pfenning and Bernardo Toninho, uses session types as the basis for a concurrent Curry–Howard isomorphism.
- *Fair Subtyping for Multi-Party Session Types*, by Luca Padovani, introduces a new subtyping relation for session types, which preserves liveness properties.
- *An Extensible Approach to Session Polymorphism*, by Matthew Goto, Radha Jagadeesan, Alan Jeffrey, Corin Pitcher and James Riely, introduces a form of polymorphism in which processes can operate correctly with a range of protocols; this is more general than polymorphism in message types.
- *Modelling Session Types using Contracts*, by Giovanni Bernardi and Matthew Hennesy, uses a process calculus language of contracts to define a semantics of session types and study different preorders on session types.
- *Observable Interface Behavior and Inheritance*, by Erika Ábrahám, Thi Mai Thuong Tran and Martin Steffen, studies the observable interface behaviour of open systems in the context of a typed concurrent object-oriented language.

The work presented in these special issues covers research goals being actively pursued by the community. COST Action IC1201: Behavioural Types for Reliable Large-Scale Software Systems (BETTY) (<http://www.behavioural-types.eu>) provides coordination for European research in this field. The initial workshop has been followed by the BEAT workshop series (<http://beat2.behavioural-types.eu>) to provide a forum for continuing collaborative research on behavioural types.

Guest editors of the special issue:

Simon Gay

António Ravara