

Imperial College London Activity Report



Nobuko Yoshida
Imperial College London

<http://mrg.doc.ic.ac.uk>

Members since October 2014

- **Laura Bocchi** obtained a lectureship in School of Computing, Kent, 1st September 2014.
- **Post-doc** Raymond Hu, Julien Lauge
- **Pre-doc** Rумыana Neykova
- **Post-doc** Tiago Cogumbreiro (until December 2014), Dominic Orchard, Nicholas Ng
- **EPSRC Doctal Fellow** Dimitrious Kouzapas
- **Phd students** Weizhen Yang, Juliana Franco

Future Members

- **Post-doc** Raymond Hu, Julien Lange
- **Pre-doc** Romyana Neykova
- **Post-doc** Dominic Orchard, Nicholas Ng, Xinyu Niu, Bernardo Toninho, Alcesta Scalas
- **Phd students** Weizhen Yang, Juliana Franco, Assel Altayeva

Invited Lectures and Talks

- POPL Tutorial (Jan 2014) by Hu with Vasconcelous
- Postdoctoral lectures, the University of Namur (Belgium) by Lange (2014)
- Postdoctoral lectures, L'Aquila (June 2014) with Dezani on the Pi-Calculus and Session Types
- BETTY Summer School (July 2014) (Hu and Yoshida)
- Distributed Software Master Course in Imperial (January-June 2014)
- Concurrent Processes Course in Imperial (October-December 2014)

Invited Talks

- Mathematical Structures of Computation, Lyon (February 2014)
- Seminar at Southampton (by Julien Lange) (March 2014)
- Seminar at Department of Computer Science, University of Leicester (March 2014)
- Seminar at IMT Lucca, Italy (May 2014)
- Seminar at Nagoya University, Japan (May 2014)
- NII Shonan Workshop, Shonan, Japan (May 2014)
- Open Problems in Concurrency Theory, Bertinoro, Invited talk (June 2014)

- Certification of high-level and low-level programs, Paris (July 2014)
- TLCA-RTA Invited Key Note Talk (July 2014)
- Matthew Hennessy, 65th Birthday (October 2014)
- Seminars at Queen Mary and Leicester (by Julien Lange) (December 2014)
- Seminar at Glasgow (by Dominic Orchard) (February 2015)
- Visit at London School for girls (by Romyana Neykova) (February 2015)
- Seminar at Lisbon University (by Romyana Neykova) (March 2015)

Industry Partners

IT can have a fast turnover of staff based on the projects the companies have on.

➤ Cognizant

Savara \implies Zero Deviation Life Cycle Platform with IBM

Steve Ross-Talbot, Bippin Makoond, Anoop Chaturve,
Venkatesh Shivalingaiah

Tim Dineen

➤ Red Hat: Gary Brown, Mark Little

- VMware \implies Pivotal (RabbitMQ) \implies Start-up
- Neykova's 9 months Internship: Finished
 - Matthias Radestock, Ask Solem, Alexis Richardson
 - Michael Bridgen (Clojure)
- Ocean Observatories Initiatives (Finished)
 - the November Group LLC: Matthew Arrott
 - Sony: Stephen Henrie
- Bank of Japan: Takahito Yamada
- Hitachi: Keiichiro Inaba
- Bloomberg: Matthew Rowling

Visitors

- Professor Tihana Galinac (University of Rijeka) to apply Scribble for usecases of networking protocols (February 2015)
- Alcesta Scalas to work on asynchronous session types (December 2014–February 2015)

Publications (Conferences)

- [POPL'15] *Julien Lange*, Emilio Tuosto, Nobuko Yoshida: From communicating machines to graphical choreographies
- [PPoPP'15] *Tiago Cogumbreiro*, *Raymond Hu*, Francisco Martins, Nobuko Yoshida: Dynamic deadlock verification for general barrier synchronisation.
- [CC'15] *Nicholas Ng*, Jose G.F. Coutinho, Nobuko Yoshida: Protocols by Default: Safe MPI Code Generation based on Session Types.
- [CONCUR'14] *Laura Bocchi*, *Weizhen Yang*, Nobuko Yoshida: Timed Multiparty Session Types.

Publications (Journals)

- [Information and Computation] Dimitris Mostrous, Nobuko Yoshida: Session Typing and Asynchronous Subtyping for the Higher-Order Pi-Calculus
- [LMCS] Dimitrios Kouzapas, Nobuko Yoshida: Globally Governed Session Semantics
- [Formal Methods in System] Romain Demangeon, Kohei Honda, Raymond Hu, Romyana Neykova, Nobuko Yoshida: Practical interruptible conversations: Distributed dynamic verification with multiparty session types and Python ([RV'13] special issue)
- Three MSCSs, JLAMP, SOCA, SPC.

- Dynamic Monitoring (P1, P2, P4, P5)
 - Multiparty Session Actors [Places'14, Coordination'14] \implies
[Coordination'14] paper is selected for a journal special issue (LMCS)
 - Timed Runtime Monitoring for Multiparty Conversations [BEAT'14] \implies submitted to a journal
- Parallel Computing (P1, P2, P4)
 - Pabble: Parameterised Scribble for Parallel Programming [PDP'14]

- ▶ Theories (P1, P6, P7)
 - Multiparty Session Nets [TGC'14]
 - Type Checking Liveness for Collaborative Processes with Bounded and Unbounded Recursion [FORTE 2014] \implies selected for a journal publication (LMCS)
 - Preciseness on Subtyping of Session Types [PPDP 2014]
 - Process Types as a Descriptive Tool for Interaction [TLCA 2014]

Plans

- Collaborations with Industry Partners (recovery from injuries)
- Investigations of use cases (P1,P2,P4,P6)
- Stable Scribble (P1,P2,P4,P6)
- Actor Extension (Erlang)
- Synthesis of timed automata, Design of Contracts and asynchronous permutations (P4,P7)
- Extensions of Multiparty Session Nets and Expressiveness (P6,P7)
- Collaborations with other partners (ED, GL, HW, Uppsala, Oslo, CWI, IC)