CV   Jetty Kleijn

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Full Professor Theoretical Computing Science

Honorary appointments

- Visiting Fellow, School of Computing, Newcastle University, Newcastle-upon-Tyne, UK (since 2005)
- Visiting Professor Faculty of Mathematics and Computer Science, Nicolaus Copernicus University, Toruń, Poland (3 months, 2015)

Research

Research interests range from pure computer science theory to the foundational aspects underlying computational processes in application areas such as biology, hardware, and business processes. Overall, the most important and recurring research theme is concurrency, a phenomenon underlying the functioning of computer systems as well as biological and cyber-physical systems.

Main research interests:

- **Theory of concurrency**
  Petri nets and other models of concurrent and distributed systems. Concurrency semantics: processes; traces; order structures. Synthesis, formal analysis and verification techniques for extended Petri net models. Compatibility in multi-component systems; local vs global conformance of protocols (e.g., groupware, financial markets, health care).
- **Bio-inspired computing and modeling of biological systems**
  Semantics for formal models inspired by molecular reactions within cells, membrane and tissue systems, following a Petri net based approach. Reaction systems as a model for biochemical reactions taking place in living cells and information processing in nature. Bio-modeling of phenomena from developmental and systems biology, an interdisciplinary research topic concerned with the application of novel, advanced modelling techniques, also involving Petri nets, to biology.
- **Foundations of Computing Science: automata and formal languages**
  Semantical models: transition systems; concurrency monoids. Structure of concurrency: generalising trace theory, equivalences and partial orders. Concurrent composition of languages: synchronisation, shuffling, products, vectors. Rewriting and collaboration.

Current projects

Partner for 'Ancient Adhesives' a project of dr Geeske Langejans, (Delft U., NL) financed by an ERC Starters Grant (2019-2023).

For LIACS, a project leader in 'International Academic Partnerships in Sciences' (InterAPS, 2018-2020) funded by the Polish National Agency for Academic Exchange (NAWA) and with as aim exchange, collaboration, meetings, and workshop organisation.

Community

Member of the Steering Committee for the annual International Conferences on Application and Theory of Petri Nets and Other Models of Concurrency as well as the Tutorial Chair and Moderator of the Petri Net Course at these conferences. Scientific director of the 2020 Advanced Course on Petri Nets, an event which takes place every 7-10 years. Other functions for the Petri Net community include: Chair of the program committee of the Petri Net Conference (in 1998 and 2010); Workshop and Tutorial Chair (2010, 2011, 2015, 2016); a General Chair for the Workshop on Structure Theory of Petri Nets (2017), Chair Program Committee for the Workshop on Concurrency metHods, Issues aNd Applications (2008).

Both within the Petri Net community and the Theoretical Computing Science area at large, participation in numerous program committees for international conferences and workshops (eg., Int. Workshop on Reaction Systems, Int. Workshop on Algorithms & Theories for the Analysis of Event Data, Int. Colloquium on Theoretical Aspects of Computing, Workshop on Membrane Computing and Biologically Inspired Process Calculi, International Conference on Language and Automata Theory and Applications, Mathematical Foundations of Computer Science). Currently, associate editor of the LNCS Transactions on Petri Nets and Other Models of Concurrency (ToPNoC) and an editor of the journal Fundamenta Informaticae. Guest editor of around 15 special issues of established journals.

Teaching

Teaching covers a broad range of topics at all different levels from pre-university teaching via bachelor and master curricula including project advising, to the PhD level (national as well as international).

Management and Organisation LIACS

Since 2016 the head of the Research Group Theoretical Computer Science. Currently, the chair of the Cluster Representatives Council for the LIACS Management, a member of the Scientific Council, and LIACS's representative at the Dutch ICT Platform (IPN) and IPN's diversity working group.Some other recent functions for LIACS include being the director of the BSc Program Computer Science in 2009-2014, chair of the Curriculum Committee for the new BSc program from 2013 to its implementation in 2015, and chair of the BSc Education Committee from 2015 until 2018. Also, chair of LIAXX (LIACS' platform for female staff and students) from 2017 until 2020.