

January 4, 2010

CURRICULUM VITAE FOR THOMAS TROELS HILDEBRANDT

Date of birth: Oct. 7th, 1972. *Nationality:* Danish.

Marital status: Married to Sybille Hildebrandt

Children: Isabella and Rebekka Hildebrandt.

Private address: Dyssegårdsvej 62, 2870 Dyssegård, Denmark.

Private email: thomas.hildebrandt@gmail.com

Work Address: IT University of Copenhagen (ITU), Rued Langgaards Vej 7, 2300 Copenhagen S, Denmark.

Telephone: (+45)7218 5000, *Email:* hilde@itu.dk, *Web:* www.itu.dk/people/hilde/

Degrees and Employment

- Oct. 2002 - present: Associate Professor, ITU.
- 2004 - present: Director of the International Research School on Foundations for Innovative Research Based Software Technology (www.FIRST.dk).
- Aug.-Oct. 2006: Paternal leave
- 2000-2003: Head of Master of Science and Masters study programme in Internet and Software Technology, ITU.
- 2002: SHL course on Personal Management of Leadership
- Oct. 2000 – 2002: Assistant Professor, ITU.
- Oct. 1999 – Oct. 2000: Post Doc (Danish Research Council), ITU.
- Feb. 2000: PhD in Computer Science, University of Aarhus.
- Aug. 1995 – Aug. 1999: PhD Scholarship (Danish National Research Foundation), BRICS, Daimi, Aarhus University.
- May 1997: MSc in Computer Science, University of Aarhus.

Research Grants (Present projects)

- 2008 – 2011: Principal investigator on the *Trustworthy Pervasive Healthcare Processes* (www.TrustCare.eu) project, supported by the Danish Research Agency (grant no.: 2106-07-0019), ITU and Resultmaker A/S (industrial partner).
- 2007 – 2010: Principal investigator on the *Computer Supported Mobile Adaptive Business Processes* (www.CosmoBiz.org) project, supported by the Danish Research Agency (grant no.: 274-06-0415), ITU and Microsoft Development Center Copenhagen (industrial partner).
- 2009 – 2013: Co-investigator on the *Services in Context: Jingling Genies (Genie)* project, joint with Peking University, Beijing, China.

Research Grants (Past projects)

- 2006 – 2008: Co-investigator on the *Calculi for Mobile Security* project, funded by the Danish Research Agency (grant no.: 272-05-0258).
- jan. 2004–2008: Co-investigator on the Bigraphical Programming Languages (BPL) project supported by the Danish Research Agency (5.6MDkr, grant no.: 2059-03-0031) and ITU.

Student Supervision Present PhD students: Hugo A. Lopez (ITU, Resultmaker) and Karen Marie Lyng (DIKU, Resultmaker), Espen Højsgaard (ITU, CosmoBiz), Raghava Rao Mukkamala (ITU, TrustCare), Lasse Nielsen (DIKU, TrustCare), Maxime Beauquier (ITU, TrustCare), and Gian Perrone (ITU, Genie). Past PhD Students: Søren Debois (ITU, BPL), Mikkel Bundgaard (ITU). More than 15 MSc students.

Longer Research Visits

- feb. 1998–jun. 1998: Laboratory for Foundations of Computer Science (LFCS), University of Edinburgh. (Hosts: Gordon Plotkin and Samson Abramsky).
- sep. 1998: School of Computer Science, McGill University, Montreal (Host: Prakash Panangaden).

Research: More than 30 peer-reviewed papers in formal semantics, logic, types, categorical models and process calculi for concurrency and mobility, and applications of formal models to secure and trustworthy process-oriented and global ubiquitous computing (as part of the UK Grand Challenge on Ubiquitous computing).

Recent Invited Research Presentations:

- *Sorting out Higher-order Contexts by playing Games with the Int-construction*, Computer Science Seminars, University of Leicester, UK, Feb, 2009
- *Polarized and Higher-order Bigraphs from Geometry of Interaction*, CHOCO project meeting, Lyon, France, June, 2008
- *Bigraphs and Distributed Reactive XML - an XML-centric model of computation?*, Computer Science Seminar, University of Brighton, UK, 2005
- *A Bigraphical Programming Environment - contributing to the UK grand challenge on Science for Global Ubiquitous Computing*, Departmental talk, Dept. of Computer Science, University of Birmingham, UK, 2005
- *Higher-Order Mobile Embedded Resources*, Dagstuhl seminar 04241, Germany, 2004.

Program Chairs, Committees and Refereeing Program co-chair on EXPRESS'07 and EXPRESS'08 (International Workshop on Expressiveness in Concurrency). Program Committee member on international conferences and symposia CONCUR 2009, COORDINATION 2009, TGC 2008, and several workshops. Refereeing for MSCS, TCS, Information and Computation, TOPLAS, The Computer Journal (Oxford University Press), Journal of Logic and Computation, CONCUR, LICS, POPL, FST&TCS, ICALP, FOSSACS, MFCS, MFPS, ICFL, CTCS, CALCO, RTA, CAV, PADO-II, ESOP, TAMC, and several workshops.

Peer-reviewed Publications

- [1] Thomas T. Hildebrandt and Vladimiro Sassone. *Comparing Transition Systems with Independence and Asynchronous Transition Systems*. In proceedings of CONCUR'96, LNCS 1119, pp. 84–97, 1996.
- [2] Thomas T. Hildebrandt and Vladimiro Sassone. *Transition Systems with Independence and Multi-arcs*. In Proceedings of POMIV'96, DIMACS vol. 29, pp. 273-288, 1996.
- [3] Thomas Troels Hildebrandt, Prakash Panangaden, and Glynn Winskel. *A Relational Model of Non-deterministic Dataflow*. In proceedings of CONCUR'98, LNCS 1466, pp. 613–628, September 1998.
- [4] Thomas Troels Hildebrandt and Sibylle Fröschle. *On Plain and Hereditary History-preserving Bisimulation*. In Proceedings of MFCS'99, LNCS 1672, pp. 354–365, 1999.
- [5] Thomas Troels Hildebrandt. *A Fully Abstract Presheaf Semantics of SCCS with Finite Delay*. In Proceedings of CTCS'99, Vol. 29, ENTCS, 1999.
- [6] Thomas Troels Hildebrandt. *Categorical Models for Concurrency: Independence, Fairness and Dataflow*. Ph.D. Dissertation, Department of Computer Science, University of Aarhus, Denmark, October, 1999.
- [7] Thomas Troels Hildebrandt. *A Generalised Kahn Principle for a Relational Semantics of Indeterminate Dataflow*. MFPS XVI, May, 2000. (ext. abstract)
- [8] Thomas Troels Hildebrandt. *Categorical Models for Fairness: Completion vs Delay*. Proceedings of MFCSIT 2000, ENTCS 40, July, 2000. (ext. abstract)
- [9] Jens Christian Godskesen, Thomas Hildebrandt, and Vladimiro Sassone. *An Overview of MR, a Calculus of Mobile Resources*, LICS, July, 2002 (short paper presentation).
- [10] Jens Christian Godskesen, Thomas Hildebrandt, and Vladimiro Sassone. *A Calculus of Mobile Resources*. Proceedings of CONCUR 2002, LNCS 2421, 2002.
- [11] Thomas Troels Hildebrandt. *Towards Categorical Models for Fairness: Fully Abstract Presheaf Semantics of SCCS with Finite Delay*. Journal of TCS, volume 294 (1/2), pp. 151-181, 2003.
- [12] Thomas Troels Hildebrandt, Prakash Panangaden, and Glynn Winskel. *A Relational Model of Non-deterministic Dataflow*. Journal of MSCS, vol. 14, 2004.

- [13] Jens Christian Godskesen, and Thomas T. Hildebrandt. *Copyability Types for Mobile Computing Resources*. International Workshop on Formal Methods and Security, Nanjing, China, May, 2004. (ext. abstract).
- [14] Mikkel Bundgaard, Thomas Hildebrandt, and Jens Christian Godskesen *A CPS Encoding of Name-passing in Higher-order Mobile Embedded Resources*. EXPRESS'04, 11th International Workshop on Expressiveness in Concurrency, London, UK, August, 2004, pp 131-150, ENTCS, vol. 128, no. 2, 2005. (grant no.: 2059-03-0031)
- [15] Thomas Hildebrandt, Henning Niss, Martin Olsen and Jacob W. Winther. *Distributed Reactive XML*, 1st International Workshop on Methods and Tools for Coordinating Concurrent, Distributed and Mobile Systems, Namur, Belgium, April, 2005. ENTCS. (grant no.: 2059-03-0031)
- [16] Thomas Hildebrandt and Jens Christian Godskesen *Extending Howe's method to early bisimulations for typed mobile embedded resources with local names*, Proceedings of the 25th Conference on Foundations of Software Technology and Theoretical Computer Science, International Institute of Information Technology Hyderabad, INDIA, December 15-18, pp 140-151, LNCS 382, 2005.
- [17] Mikkel Bundgaard, Thomas Hildebrandt, and Jens Christian Godskesen *Semantics of Higher-order Mobile Embedded Resources with local names*. Nordic Workshop on Programming Theory (NWPT), DIKU, Copenhagen, Denmark, October 19-21, 2005. (grant no.: 2059-03-0031)
- [18] Mikkel Bundgaard and Thomas Hildebrandt *Biographical Semantics of Higher-order Mobile Embedded Resources with Local Names*, GT-VC 2005, Workshop on Graph Transformation for Verification and Concurrency, San Francisco, USA, August 22, 2005. To appear in ENTCS. (grant no.: 2059-03-0031)
- [19] Lars Birkedal, Søren Debois, Ebbe Elsborg, Thomas Hildebrandt, Henning Niss, *Biographical Models of Context-aware Systems*, In Proceedings of International conference on Foundations of Software Sciences and Computation Structures (FOSSACS), Vienna, Austria, 2006, To appear. (grant no.: 2059-03-0031)
- [20] Thomas Hildebrandt, Henning Niss and Martin Olsen *Formalising Business Process Execution with Bigraphs and Reactive XML*, 8th International Conference on Coordination Models and Languages (COORDINATION), Bologna, Italy, LNCS 4038, June, 2006. (grant no.: 2059-03-0031)
- [21] L. Birkedal, M. Bundgaard, T.C. Damgaard, S. Debois, E. Elsborg, A.J. Glenstrup, T. Hildebrandt, R. Milner, H. Niss, *Biographical Programming Languages for Pervasive Computing*. Invited paper at 1st International Workshop on Combining Theory and Systems Building in Pervasive Computing, Dublin, May, 2006.
- [22] Mikkel Bundgaard, Thomas Hildebrandt, and Jens Christian Godskesen *A CPS Encoding of Name-passing in Higher-order Mobile Embedded Resources*. Journal of TCS, volume 356, pp 422-439, 2006.
- [23] L. Birkedal, S. Debois, T. Hildebrandt *Sortings for Reactive Systems*. 17th International Conference on Concurrency Theory, CONCUR 2006, Bonn, Germany, LNCS 4137, August 27-30, 2006. (grant no.: 2059-03-0031)
- [24] M. Bundgaard, T.Hildebrandt, and J. Chr. Godskesen. *A CPS Encoding of Name-Passing in Higher-Order Mobile Embedded Resources*. Journal of

- Theoretical Computer Science, 356(3):, pp 422-439, 2006.
- [25] M. Bundgaard, T.Hildebrandt, and J. Chr. Godskesen. *Modelling the security of smart cards by hard and soft types for higher-order mobile embedded resources..* In Proceedings of SecCo'07, ENTCS, 194(1), pp 23-38, Elsevier, 2007.
- [26] Mikkel Bundgaard, Arne J. Glenstrup, Thomas Hildebrandt, Espen Højsgaard, Henning Niss. *Formalizing Higher-order Mobile Embedded Business Processes with Binding Bigraphs*, 10th International Conference on Coordination Models and Languages, Oslo, June, 2008.
- [27] Mikkel Bundgaard, Thomas Hildebrandt, Espen Højsgaard. *Seamlessly Distributed & Mobile Workflow or: The right processes at the right places*, Workshop on Programming Language Approaches to Concurrency and Communication-Entric Software (PLACES), Oslo, June, 2008.
- [28] L. Birkedal, S. Debois, T. Hildebrandt *On the Construction of Sortings for Bigraphical Reactive Systems*. 19th International Conference on Concurrency Theory, CONCUR 2008, Toronto, Canada, August, 2008.
- [29] Karen Marie Lyng, Thomas Hildebrandt, Raghava Rao Mukkamala. *From Paper Based Clinical Practice Guidelines to Declarative Workflow Management*, 2nd International Workshop on Process-oriented information systems in health-care (ProHealth 08), Milan, September, 2008.
- [30] Raghava Rao Mukkamala, Thomas Hildebrandt, Janus Boris Tth. *Result-maker Online Consultant: From Declarative Workflow Management in Practice to LTL*, First International Workshop on Dynamic and Declarative Business Processes (DDBP), Munich, September, 2008.
- [31] Ebbe Elsborg, Thomas T. Hildebrandt, and Davide Sangiorgi. *Type Systems for Bigraphs* In Proceedings of the 4th International Symposium on Trustworthy Global Computing (TGC'08). LNCS, Springer-Verlag, 2009. To appear. (Full version containing full proofs is available as an ITU technical report.)
- [32] L. Birkedal, S. Debois, T. Hildebrandt *Games and Higher-Order Linear Dataflows*. Games for Logic and Programming Languages IV, (affiliated to ETAPS 2009), 28-29 March 2009, York, United Kingdom.
- [33] Thomas Hildebrandt and Hugo A. Lopez. *Types for Secure Pattern Matching with Local Knowledge in Universal Concurrent Constraint Programming* To appear in Proceedings of the 25th International Conference on Logic Programming (ICLP 2009), Pasadena, California, USA July 14-17, 2009.
- [34] Jørgen Staunstrup, Frank Tung, Yu Lian, Li Weiping, Lin Huiping, Chu Weijie, John Paulin Hansen, Arne Glenstrup, and Thomas Hildebrandt. *Services in Context* To appear in Proceedings of the 2009 International Conference on Service Science (ICSS 2009), Beijing, China, May 14-15, 2009.
- [35] Tim Hallwyl, Fritz Henglein, and Thomas Hildebrandt. *A Standard-driven Implementaion of WS-BPEL 2.0*. To appear in Proceedings of the 25th Symposium On Applied Computing, Sierre, Switzerland, March 22- 26, 2010.

Technical Reports, etc.

- [1] Thomas Troels Hildebrandt and Vladimiro Sassone. *Transition systems with independence and multi-arcs*. BRICS Report RS-97-10, Daimi, University of Aarhus, 1997. Full version of paper in proceedings of POMIV'96, DIMACS vol. 29, pp. 273-288.
- [2] Thomas Troels Hildebrandt. *Extensions of independence models*. Progress report (Masters Thesis), May 1997.
- [3] Thomas Troels Hildebrandt, Prakash Panangaden, and Glynn Winskel. *Relational semantics of non-deterministic dataflow*. BRICS Report RS-97-36, Department of Computer Science, University of Aarhus, December 1997. 21 pp.
- [4] Thomas Troels Hildebrandt and Sibylle Fröschle. *On plain and hereditary history-preserving bisimulation*. BRICS Report, RS-99-04, 1999.
- [5] Jens Chr. Godskesen, Thomas Hildebrandt and Søren Eduard Jacobsen, *An Implementation of the MR calculus*, ITU-TR-2002-14, 2002
- [6] Jens Chr. Godskesen, Thomas Hildebrandt and Vladimiro Sassone, *A calculus of mobile resources*, ITU-TR-2002-16, 2002.
- [7] Thomas Hildebrandt, Jens Chr. Godskesen, Mikkel Bundgaard, *Bisimulation Congruences for Homer - a Calculus of Higher Order Mobile Embedded Resources*, ITU-TR-2004-52, 2004
- [8] Thomas Hildebrandt and Jacob W. Winther, *Bigraphs and (Reactive) XML - an XML-centric model of computation*, ITU-TR-2005-56, 2005
- [9] Thomas Hildebrandt, Henning Niss, Martin Olsen and Jacob W. Winther, *Distributed Reactive XML: an XML-centric coordination middleware*, ITU-TR-2005-62, 2005
- [10] Martin Olsen, Jacob W. Winther, Henning Niss and Thomas Hildebrandt, *Reactive XML - a peer-to-peer middleware for mobile context-dependent coordination*, poster at 7th International Conference on Coordination Models and Languages (COORDINATION), 2005.
Available at www.itu.dk/people/hilde/Papers/ReactiveXMLCOORD05.pdf
- [11] Mikkel Bundgaard and Thomas Hildebrandt, *Bigraphical Semantics of Higher-Order Mobile Embedded Resources with Local Names*, ITU-TR-2005-70, 2005
- [12] Lars Birkedal, Søren Debois, Ebbe Elsborg, Thomas Hildebrandt, Henning Niss, *Bigraphical Models of Context-aware Systems*, ITU-TR-2005-74, 2005
- [13] L. Birkedal, S. Debois, T. Hildebrandt *Sortings for Reactive Systems*. ITU-TR-2006-84, 2006.
- [14] Thomas Hildebrandt, Henning Niss and Martin Olsen, *Business Process Execution with Bigraphs and Reactive XML*, ITU-TR-2006-85, 2006.
- [15] Thomas Hildebrandt, Henning Niss, Mikkel Bundgaard, Kjeld Schmidt and Thomas Jensen (MDCC), *Computer Supported Mobile Adaptive Business Processes: Position paper on the CosmoBiz research project (2007-2010)*, 1st Informal Workshop on Formal Models for Business Process Execution, Service Oriented Computing and CSCW, ITU, October, 2007.
- [16] Mikkel Bundgaard, Thomas Hildebrandt, and Jens Chr. Godskesen. *Typing Linear and Non-Linear Higher-Order Mobile Embedded Resources with Local Names*. Technical report TR-2007-97, IT University of Copenhagen, May 2007.

- [17] Roberto Amadio, Thomas Hildebrandt (eds). *Preliminary Proceedings of 14th International Workshop on Expressiveness in Concurrency (EXPRESS'07)*, TR-2007-100, IT University of Copenhagen, 2007.
- [18] Mikkel Bundgaard, Arne John Glenstrup, Thomas Hildebrandt, Espen Hjsgaard, and Henning Niss. *Formalizing WS-BPEL and Higher Order Mobile Embedded Business Processes in the Bigraphical Programming Languages (BPL) Tool*, TR-2008-103, IT University of Copenhagen, 2008.
- [19] Mikkel Bundgaard, Jens Chr. Godskesen, and Thomas Hildebrandt. *On Encoding the Pi-calculus in Higher-Order Calculi*, TR-2008-106, IT University of Copenhagen, 2008.
- [20] Daniele Gorla and Thomas Hildebrandt (eds). *Preliminary Proceedings of the 15th International Workshop on Expressiveness in Concurrency (EXPRESS'08)*, TR-2008-108, IT University of Copenhagen, 2008.
- [21] Ebbe Elsborg, Thomas T. Hildebrandt, and Davide Sangiorgi. *Type Systems for Bigraphs*. Technical Report TR-2008-110, IT University of Copenhagen, October 2008. ISBN: 9788779491847.
- [22] Lars Birkedal, Mikkel Bundgaard, Søren Debois, Davide Grohmann, Thomas Hildebrandt. *Higher-order Contexts via Games and the Int-construction*. Technical report TR-2009-117 in IT University Technical Report Series, January 2009.
- [23] Lars Birkedal, Søren Debois, Thomas Hildebrandt. *Games & Higher-order Linear Dataflows*. Extended abstract, Games for Logic and Programming Languages IV. Workshop affiliated with ETAPS 2009, 28-29 March 2009, York, United Kingdom, January 2009.

Popular Science Communication and Appearances in Press

1. *IT-Universitetet: Objekter er yt, processer er in*, Version2 Online (version2.dk), December 28th, 2009.
2. *Nutidens it er forældet*, NewsMarket Online, December 28th, og Presswire online 23th December, 2009.
3. *Forsker kritiserer forældede it-løsninger*, ComOn Online, December 23th, 2009.
4. *En gang på nettet, altid på nettet*. Interview in chapter of the book: "Den åbne dagbog - unges brug af nettet", ISBN 9788792208897, 2008.
5. *Sæt strøm til rutinerne*. Interview in "Momentum", Microsoft Danmark, September/08.
6. *Pas på Dankortet*, TV2-øst web news, 8pm, April 9th, 2006
7. *Dankort svindel*, TV2-øst. 7:30pm television news, April 9th, 2006.
8. *Karriere som ph.d. i erhvervslivet?*, readIT, February 1st, 2005

9. *Datalogiens store udfordringer: Allestedsnærværende computere*, Harddisken P1, Januar 15th, 2005
10. *Allestedsnærværende computere*, DR Videnskab+IT (online), Januar 5th, 2005
11. *Category Theory and Computer Science at ITU*, readIT, October 1st, 2004
12. *ITU startup aims to revolutionize live-streaming technology*, readIT, May 25th, 2004