

GAUDEL, Marie-Claude

Short CV

Marie-Claude Gaudel was appointed as a professor at the University of Paris-Sud at Orsay in 1984. Before joining UPS, she was a researcher at INRIA, and then in charge of the Software Engineering group at the industrial research centre of Alcatel-Alsthom (Marcoussis, France).

Her research interests are in the areas of software: formal methods, program robustness, testing and certification.



Her main achievements are listed below:

- Development of formal specification languages and environments motivated and validated by industrial case studies (telephone, train control, and nuclear plant...), or reference case studies (Unix File Management System, Production Cell, Steam Boiler Control System...)
- Development of a theory and a tool for tests selection from formal specifications; application to several formal methods and case studies.
- Automation of statistical software testing; assessment of ultra-reliability

In 1984, she got an Outstanding Paper Award of the IEEE Chapter of Software Engineering for the work of her group on program robustness in Marcoussis. She is Doctor Honoris Causa of EPFL, and she got the CNRS Silver Medal in 1996 for her work on software testing. She has been consultant to several companies and agencies in France and UK.

In 1996-1997 she was an invited professor at IME-USP, Instituto de Matematica e Estatistica, Universidade de Sao Paulo. From 2000 to 2006 she has been a member of the board of COFECUB.

In 2006-2008 she got grants of the Royal Society for a visit and a joint international project with The University of York.

She is on the editorial board of two international scientific journals, *Science of Computer Programming* (Elsevier) and *Formal Aspects of Computing* (Springer); she has been a member of, and chaired, numerous programme committees of important conferences.

In 2008, she was the general chair of QSIC in Oxford, and in 2010 the general chair of the 3rd IEEE-ICST conference in Paris.

Main recent publications

1. — with A. Galves, *Rare Events in Stochastic Dynamical Systems and Failures in Ultra-Reliable Reactive Programs*, IEEE Fault Tolerant Computing Symposium, pp. 324-333, Munich, 1998.
2. — with P. R. James, M. Endler, *Development of an Atomic Broadcast Protocol using LOTOS*, *Software Practice and Experience*, 29(8), 699-719, 1999.
3. — with P. R. James, *Testing Algebraic Data Types and Processes: a unifying theory*, *Formal Aspects of Computing*, 10(5-6), 436-451, 1999.

4. — with S. D. Gouraud, A. Denise, B. Marre, *A new Way of Automating Statistical Testing Methods*, 16th IEEE International Conference on Automated Software Engineering, San Diego, pp. 5-12, 2001.
5. — with G. Lestiennes, *Testing Processes from Formal Specifications with Inputs, Outputs and data types*, 13th IEEE Int. Symposium on Software Reliability Engineering, Annapolis, pp. 3-14, 2002.
6. — with A. Denise, S. D. Gouraud, *A Generic Method for Statistical Testing*, 15th IEEE Int. Symposium on Software Reliability Engineering, Saint-Malo, pp. 25-34, 2004.
7. *Toward Undoing in Composite Web Services*, in Architecting Dependable Systems III, Lecture Notes in Computer Science n° 3549, pp 59-68, Springer Verlag, 2005.
8. — with A. Denise, S.-D. Gouraud, R. Lassaigne, and S. Peyronnet, *Uniform random sampling of traces in very large models*. In 1st ACM International Workshop on Random Testing (RT), pages 10–19, 2006.
9. — with N. Baskiotis, M. Sebag and Sandrine-Dominique Gouraud, *A Machine Learning Approach for Statistical Software Testing*, in IJCAI, Proceedings of the 20th International Joint Conference on Artificial Intelligence, pages 2274-227, 2007.
10. — with A. Cavalcanti, *Testing for refinement in CSP*. In Formal Methods and Software Engineering, ICFEM 2007, volume 4789 of Lecture Notes in Computer Science, pages 151-170. Springer Verlag, 2007.
11. — with Alain Denise, Sandrine-Dominique Gouraud, Richard Lassaigne, Johan Oudinet and Sylvain Peyronnet, *Coverage-biased random exploration of large models*, invited lecture, ETAPS Workshop on Model Based Testing, 11 pages, to appear in Electronic Notes in Theoretical Computer Science, March 2008
12. — with A. Cavalcanti, *A note on traces refinement and the conf relation in the Unifying Theories of Programming*, Unifying Theories of Programming 2008, 8th-10th September, Trinity College Dublin, volume 5713 of Lecture Notes in Computer Science, pages 42-61, Springer-Verlag, 2008.
13. —. *Software testing based on formal specification*, in Paulo Borba, Ana Cavalcanti, Augusto Sampaio, and Jim Woodcock editors, Testing Techniques in Software Engineering, Second Pernambuco Summer School on Software Engineering, PSSE 2007, December 3-7, 2007, Revised Lectures, volume 6153 of Lecture Notes in Computer Science, pages 215--242. Springer, 2010.
14. —with Abderrahmane Feliachi and Burkhart Wolff, *Unifying theories in Isabelle/HOL*, in Symposium on Unifying Theories of Programming 2010, volume to appear of Lecture Notes in Computer Science, Shanghai, China, November 2010, Springer Verlag.
15. — with Johan Oudinet, Alain Denise, Richard Lassaigne, and Sylvain Peyronnet, *Uniform Monte-Carlo model checking*, in FASE 2011, to appear in Lecture Notes in Computer Science, Saarbrucken, March 2011. Springer Verlag.
16. — with Alain Denise, Sandrine-Dominique Gouraud, Richard Lassaigne, Johan Oudinet, and Sylvain Peyronnet, *Coverage-biased random exploration of large models and application to testing*, STTT, International Journal on Software Tools for Technology Transfer, accepted, 2011.