

Nicolas BERTHIER



Born 11/19/1985
French Nationality

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Research Interests

Discrete Controller Synthesis, Reactive Control Techniques for Systems Design, Model-based Design, Programming Languages for Systems Design, Global Control for Resource and Energy Management in Embedded Systems, Operating Systems Design and Implementation

Research Experience

- Dec 2015–... **RESEARCH ASSOCIATE** in the [Department of Computer Science](#) of the [University of Liverpool](#)
Research on control techniques for energy efficient circuits design
- Jun 2013
–Nov 2015 **POSTDOCTORAL FELLOW** in [SUMO Team](#), [INRIA Rennes — Bretagne Atlantique](#), France
Research on discrete controller synthesis for infinite state systems
- Jun 2012
–May 2013 **POSTDOCTORAL FELLOW** in [ERODS Team](#), [LIG Lab.](#), Grenoble, France
Investigating reactive control techniques for autonomic management systems
- Oct 2008
–Mar 2012 **PH.D CANDIDATE** in [Synchrone Team](#), [Verimag Lab.](#), Grenoble
Research on power-aware implementation of embedded systems
Advised by Florence Maraninchi and Laurent Mounier; Defended on March 12, 2012
- Feb–Sept 2008 **RESEARCH INTERN** in [Synchrone Team](#), [Verimag Lab.](#)
Research on system-level modeling of embedded control systems
Advised by Florence Maraninchi and Christophe Rippert
- Apr–Sept 2007 **RESEARCH INTERN** in [ISE Team](#), [Verimag Lab.](#)
Designed a hybrid dynamic memory management mechanism for real-time Java applications
Advised by Christophe Rippert and Guillaume Salagnac
- Jun–Sept 2006 **RESEARCH INTERN** in [ISE Team](#), [Verimag Lab.](#)
Research on the life span of dynamically allocated objects in real-time Java applications
Advised by Christophe Rippert and Guillaume Salagnac
- Apr–Sept 2005 **INTERN** in [OSIRIS Team](#), [TIMC Lab.](#), Grenoble
Investigated and developed a tool for automatic generation of graphical user interface from ISIS query
Advised by Ana Simonet
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Education

- 2008–2012 **PH.D IN COMPUTER SCIENCE** at [Université Joseph Fourier](#), Grenoble, France
- 2005–2008 **M.RES IN COMPUTER SCIENCE (MAGISTÈRE)** at [Université Joseph Fourier](#), Grenoble, France
magna cum laude
- 2006–2008 **M.Sc IN COMPUTER SCIENCE** at [Université Joseph Fourier](#)
cum laude
- 2005–2006 **B.Sc IN COMPUTER SCIENCE** at [Université Joseph Fourier](#)
cum laude
- 2003–2005 **UNDERGRADUATE DEGREE IN COMPUTER SCIENCE (DUT)**
at [Université Pierre-Mendès-France](#), Grenoble
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Publications

Journal Articles

Nicolas Berthier, Éric Rutten, Noël De Palma, and Soguy Mak-Karé Gueye. [Designing Autonomic Management Systems by using Reactive Control Techniques](#). *IEEE Trans. Softw. Eng.*, 42(7):640–657, July 2016.

Soguy Mak-Karé Gueye, Noël De Palma, Éric Rutten, Alain Tchana, and Nicolas Berthier. [Coordinating Self-sizing and Self-repair Managers for Multi-tier Systems](#). *Future Generation Computer Systems*, 35(0):14–26, June 2014.

Nicolas Berthier, Florence Maraninchi, and Laurent Mounier. [Synchronous Programming of Device Drivers for Global Resource Control in Embedded Operating Systems](#). *ACM Trans. Embed. Comput. Syst.*, 12(1s):39:1–39:26, March 2013.

Conference Papers

Nicolas Berthier, Hervé Marchand, and Éric Rutten. [Symbolic Limited Lookahead Control for Best-effort Dynamic Computing Resource Management](#). In *14th Int. Workshop on Discrete Event Systems*, WODES '18, pages 112–119. IFAC, June 2018.

Mete Özbaltan and Nicolas Berthier. [Exercising Symbolic Discrete Control for Designing Low-power Hardware Circuits: an Application to Clock-gating](#). In *14th Int. Workshop on Discrete Event Systems*, WODES '18, pages 120–126. IFAC, June 2018.

Nicolas Berthier, Frederico Alvares, Hervé Marchand, Gwenaël Delaval, and Éric Rutten. [Logico-numerical Control for Software Components Reconfiguration](#). In *1st IEEE Conference on Control Technology and Applications*, CCTA '17. IEEE, August 2017.

Idress Husien, Nicolas Berthier, and Sven Schewe. [A Hot Method for Synthesising Cool Controllers](#). In *Proceedings of the 24th ACM SIGSOFT International SPIN Symposium on Model Checking of Software*, SPIN 2017, pages 122–131. ACM, July 2017.

Nicolas Berthier and Hervé Marchand. [Deadlock-Free Discrete Controller Synthesis for Infinite State Systems](#). In *54th IEEE Conference on Decision and Control*, CDC '15, pages 1000–1007. IEEE, December 2015.

Nicolas Berthier, Xin An, and Hervé Marchand. [Towards Applying Logico-numerical Control to Dynamically Partially Reconfigurable Architectures](#). In *5th Int. Workshop on Dependable Control of Discrete Systems, DCDS '15*. IFAC, May 2015.

Nicolas Berthier and Hervé Marchand. [Discrete Controller Synthesis for Infinite State Systems with ReaX](#). In *12th Int. Workshop on Discrete Event Systems, WODES '14*, pages 46–53. IFAC, May 2014.

Nicolas Berthier, Florence Maraninchi, and Laurent Mounier. [Synchronous Programming of Device Drivers for Global Resource Control in Embedded Operating Systems](#). In *Proceedings of the 2011 SIGPLAN/SIGBED Conference on Languages, Compilers and Tools for Embedded Systems, LCTES '11*, pages 81–90. ACM, 2011.

Thesis

Nicolas Berthier. [Programmation synchrone de pilotes de périphériques pour un contrôle global de ressources dans les systèmes embarqués](#). PhD thesis, Université de Grenoble, March 2012.

Nicolas Berthier. [System-level Modeling of Embedded Control Systems: a Case Study from the Automated Transfer Vehicle](#). Master's thesis, Université Joseph Fourier, June 2008.

Nicolas Berthier. [Gestion hybride de la mémoire dynamique dans les systèmes Java temps-réel](#). Magistère deuxième année, Université Joseph Fourier, September 2007.

Nicolas Berthier. [Analyse de la démographie des objets dans les systèmes Java temps-réel](#). Magistère première année, Université Joseph Fourier, September 2006.

Other

Nicolas Berthier, Florence Maraninchi, and Laurent Mounier. [Global Platform Management by Using Synchronous Device Drivers in \$\mu\$ -Kernel-based Systems](#). Conference on Languages, Compilers, Tools and Theory for Embedded Systems (LCTES). Fun Ideas and Thoughts Session — FIT, April 2011. (*Best FIT Presentation Award*).

Teaching Experience

- 2013 **TEACHING ASSISTANT** at [ISTIC, University of Rennes 1, France](#)
Algorithms on Graphs; tutorial class, 3rd year undergraduates
- 2008–2011 **TEACHING ASSISTANT** at [Ensimag, Grenoble INP, France](#)
Computer Architecture; practical courses, 1st year engineering school
Unix & Shell-script Development; lecture and practical courses, 1st year engineering school
C Programming; project supervision, 1st year engineering school
System Programming; project supervision, 2nd year engineering school
- 2008–2010 **TEACHING FELLOW** at [Conservatoire National des Arts et Métiers, regional centre in Grenoble](#)
Algorithms and Data Structures; evening classes, lecture courses, 1st year undergraduates
- Sept–Oct 2007 **TUTORING** at [Université Joseph Fourier, Grenoble](#)
Algorithms, language theory and automata; 3rd year undergraduates
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Language Proficiency

- French: *native*
 - English: *fluent*
 - Spanish: *basic*
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Miscellaneous

- Leisure: mountaineering, snowboarding
- Interests: free software advocacy, zetetics
- French driving licence B
- Ten years of scouting