

CURRICULUM VITAE OF ALEXANDRE DONZÉ

Current Position : **Post-Doctoral researcher at Verimag Laboratory (CNRS)**

PERSONAL INFORMATION

Born : 10th of October, 1979 at Vesoul (France)

Citizenship : French

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DIPLOMAE, EXPERIENCE AND EDUCATION

- PhD in Mathematics and Computer Science from the Université Joseph Fourier (Grenoble-1)
- Engineer graduated from the French “Grande École” ENSIMAG (École Nationale Supérieure d’Informatique et Mathématiques Appliquées de Grenoble)

From Oct. 2008 **Post-Doctoral Researcher** at VERIMAG laboratory, Grenoble

2007–2008 **Post-Doctoral Researcher** at the School of Computer Science of Carnegie Mellon University, Pittsburgh, with Pr. Edmund Clarke and Pr. Bruce Krogh

June 2007 **Ph.D. in Mathematics and Computer Science** at the University of Grenoble (Université Joseph Fourier) under the supervision of Oded Maler and Thao Dang

2002–2003 **Master of Science Degree in Computer Science** at the University of Grenoble (Université Joseph Fourier)

2001–2002 **Master of Science Degree in Applied Mathematics** at the University of Grenoble (Université Joseph Fourier)

1999–2002 **Engineering Master Degree** in computer science and applied mathematics at the École Nationale Supérieur d’Informatiques et de Mathématiques Appliquées (ENSIMAG), Technological University of Grenoble

RESEARCH TOPICS

Hybrid dynamical systems (discrete and continuous)

- Simulation and sensitivity analysis in the presence of discrete events
- Parameter identification and synthesis with respect to formal specification
- Non-linear dynamics and control theory
- Systems robustness and global sensitivity analysis
- Validated computations (interval arithmetics, Taylor Models)

Formal Methods for Model-Based Design

- Reachability analysis and model-checking for continuous and hybrid systems
- Monitoring and quantitative interpretation of temporal logic formulas
- Testing ((Quasi)-Monte-Carlo, statistical hypothesis testing) for formal specifications
- Applications for embedded systems, mixed-signal circuits and systems biology

PUBLICATIONS

Journals

1. Donzé A., Fanchon E., Gattepaille L., Maler O. and Tracqui P., *Robustness Analysis and Behavior Discrimination in Enzymatic*, PLoS ONE 6(9) : e24246. doi :10.1371/journal.pone.002424, 2011
2. Donzé A., Langmead C.J., Clermont G. *Parameter Synthesis in Nonlinear Dynamical Systems : Application to Systems Biology*, Journal of Computational Biology, 2010
3. E. M. Clarke, A. Donzé, A. Legay, *On Simulation-Based Probabilistic Model Checking of Mixed-Analog Circuits*, Formal Methods in Systems Design, 2009.

Refereed International Conferences

1. E. Asarin, A. Donzé, O. Maler, D. Nickovic. *Parametric Identification of Temporal Properties*, Proc. of RV 2011, San Francisco, Sept. 2011
2. Frehse G., Le Guernic C., Donzé A., Ray R., Lebeltel O., Ripado R. , Girard A., Dang T. , Maler O., *SpaceEx : Scalable Verification of Hybrid Systems*, Proc. of CAV'11, Salt Lake City, USA, Jul 2011
3. A. Donzé, O. Maler, *Robust Satisfaction of Temporal Logic over Real-Valued Signals*, Proc. of FORMATS'10, IST Austria, Klosterneuburg, 2010
4. A. Donzé, *Breach, A Toolbox for Verification and Parameter Synthesis of Hybrid Systems*, Proc. of CAV'10, Edimburgh, UK, Jul. 2010
5. A. Donzé, C.J. Langmead, G. Clermont, A. Legay *Parameter Synthesis in Nonlinear Dynamical Systems : Application to Systems Biology*, Proc. of RECOMB'09, Tucson (Az), USA, May 2009
6. A. Donzé, B. Krogh, A. Rajhans *Parameter Synthesis for Hybrid Systems with an Application to Simulink Models*, Proc. of HSCC'09, San Francisco, USA, Apr. 2009
7. E. M. Clarke, A. Donzé, A. Legay, *Statistical model checking of mixed-analog circuits with an application to a third-order delta-sigma modulator*, Proc. of HVC'08 (**Best Paper Award**), Haifa, Israel, Oct. 2008
8. J. P. Kapinski, F. Lerda, A. Donzé, B. Krogh, H. Maka, S. Wagner, *Control software model checking using bisimulation functions for nonlinear systems*, Proc. of 47th IEEE Conference on Decision and Control, Cancun, Mexico, Dec. 2008
9. T. Dang, A. Donzé, O. Maler, N. Shalev *Sensitive state space exploration*, Proc. of 47th IEEE Conference on Decision and Control, Cancun, Mexico, Dec. 2008
10. A. Donzé, O. Maler, *Systematic Simulation using Sensitivity Analysis*, HSCC'07, April 2007
11. A. Donzé, *On Temporal Differences Algorithms For Continuous Systems*, ICINCO'05, Barcelona, Spain, July 2005
12. T. Dang, A. Donzé, O. Maler, *Verification of Analog and Mixed Signal Circuits using Hybrid Systems Techniques* FMCAD'04, Sept. 2004

International Workshops

1. A. Donzé, *Parameter Synthesis for Mixed-Signal Circuits using Numerical Optimization*, Frontiers in Analog Circuit (FAC) Synthesis and Verification, Workshop of CAV'2011, Snowbird, Utah, USA, Jul. 2011
2. S.K. Jha, A. Donzé, R. Paul, J. Dutta-Moscato, Q. Mi, G. Clermont, Y. Vodovotz, C.J. Langmead, *Parameter Estimation and Synthesis for Systems Biology : New Algorithms for Nonlinear and Stochastic Models*, 9th International Conference on Complexity in Acute Illness (ICCAI), Atlanta, USA, Sept. 2010
3. E. M. Clarke, A. Donzé, A. Legay *Statistical model checking of mixed-analog circuits*, Formal Verification of Analog Circuits, Workshop of CAV'2008, Princeton, USA, Jul. 2008

Research Reports

1. T. Dang, P. Caspi, A. Donzé, G. Frehse, A. Girard, C. Le Guernic, O. Maler, T. Nahhal, and D. Nickovic. *Research report on static verification of analog design* Prosyd Deliverable D3.2/18, VERIMAG, 2007
 2. T. Dang, A. Donzé, O. Maler, D. Nickovic and A. Pnueli. *Research report on timed/analog synthesis* Prosyd Deliverable D2.2/5, VERIMAG, 2007
 3. A. Donzé. *On Temporal Differences Algorithms For Continuous Systems* Verimag Technical Report number TR-2005-8, May 2005
 4. A. Donzé, S. Shapero. *Search Methods Based Control of the Simplified Model of the ABB Power Network*, Verimag Technical Report number TR-2005-6, Mar 2005
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TALKS, VISITS AND INVITED SEMINARS

Oral Presentations for International Conferences

- RV'11, <http://rv2011.eecs.berkeley.edu/>
- CAV'11, <http://www.cs.utah.edu/events/conferences/cav2011/>
- FORMATS'10, <http://pub.ist.ac.at/formats2010>
- CAV'10, <http://www.liafa.jussieu.fr/~touili/cav2010>
- RECOMB'09, <http://www.bio5.org/recomb2009>
- HSCC'09 <http://www.ee.ucla.edu/~hsc09/>
- HVC'08 <http://www.research.ibm.com/haifa/conferences/hvc2008/images/photos/target27.html>
- FAC'08, <http://www.em.informatik.uni-frankfurt.de/FAC08.html>
- CDC'08, <http://www.ieeecss.org/CAB/conferences/cdc2008>
- HSCC'07 <http://hsc07.dii.unisi.it>
- ICINCO'05 <http://www.icinco.org/ICINCO2005>

Misc. Visits and Seminars

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| Feb. 2011 | Guest speaker at the Workshop on “Identification and Control of Biological Interaction Networks”, INRIA Rhône Alpes |
| Nov. 2010 | Guest speaker at the workshop on “MetaModelling of multiscale systems”, Center of Integrative Genetics, University of Life Sciences, Aas, Norway |
| Aug.-Nov. 2009 | Invited seminar and two weeks visit at Automatic Control Laboratory of ETH Zurich ; |
| Nov. 2008 | Technical meeting at Eindhoven, within MULTIFORM European project ; |
| Dec. 2007 | Invited Seminar at the Specification and Verification Center of Carnegie Mellon University of Pittsburgh, Pennsylvanie |
| July 2003 | One month visit at the Department of Electrical and Computer Engineering of Carnegie Mellon University, Pittsburgh, PA , USA ; |
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RESEARCH ACTIVITIES

Workshop Organizer

- Toward Systems Biology (TSB'11), Grenoble, France, May 2011, with O. Maler and E. Fanchon

Program Committee

- Modelisation of Reactive Systems (MSR'11), Lille, France, Nov. 2011

Reviewer

- Reviewer for the ACM Transactions on Design Automation of Electronic Systems
 - Reviewer for the European Journal of Control
 - Reviewer for International Conferences :
 - Euromicro Conference on Real-Time Systems (ECRTS'11)
 - Conference on Decision and Control (CDC'10)
 - Nonlinear Control Systems (NOLCOS'10)
 - Computer Aided Verification (CAV'10, CAV'11)
 - American Control Conference (ACC'09)
 - Hybrid Systems : Computation and Control (HSCC'04, HSCC'05, HSCC'06, HSCC'07)
 - Formal Modeling and Analysis of Timed Systems (FORMATS'06, FORMATS'11)
 - Application of Concurrency to System Design (ACSD'04)
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TEACHING ACTIVITIES

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| 2010-2011 | Teaching assistant in Embedded Systems (ENSIMAG Engineering School) <ul style="list-style-type: none">– 18h of control systems implementation |
| 2009-2011 | Teaching assistant in Computer Science (University of Grenoble I) <ul style="list-style-type: none">– 64h of introduction to algorithmics, Unix environment and the C prog. language– 60h of introduction to logics for computer science– 20h of software engineering (end of semester project) |
| 2003-2006 | Teaching Assistant in Mathematics (University of Savoie) <ul style="list-style-type: none">– 62 h of Elementary Algebra and Geometry ;– 86 h of Calculus ;– 36 h of Numerical Analysis ;– 12 h of Elementary Statistics. |
| 2003 | Teaching Assistant in Mathematics (University of Grenoble I) <ul style="list-style-type: none">– 35h of Elementary Algebra and Geometry |