



Curriculum Vitae

Didier Buchs

Personal data

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| Name, firstname | • BUCHS Didier |
| Citizenship | • Swiss |
| Date of Birth | • 18 july 1959 |
| Place of Birth | • Geneva |
| Marital Status | • married, 1 child |
| Private Address | • 27 ch. des Bois-Jacquet, CH-1219 Aïre. |
| Professional Address | • Centre Universitaire d'informatique; University of Geneva, 7 route de Drize, Bât. A, CH-1227 Carouge. |
| Group Web site | • http://smv.unige.ch |
| Current position | • Ordinary Professor; Dép. d'informatique; Fac. des Sciences; University of Geneva. |

Education

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| PhD. | • Computer Science at University of Geneva 1989. |
| Computer Science | • Diploma at University of Geneva 1984. |
| Engineer | • Nuclear Physics at Geneva Engineering School 1978. |

Experience

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| 2014- now | • Ordinary Professor; Director of Software Modeling and Verification Laboratory; Département d'informatique; Faculty of Sciences; University of Geneva |
| 2007 march | • Invited professor at LIP6 University Pierre-Marie Curie, Paris, France |
| 2003- 2013 | • Associate Professor; Director of Software Modeling and Verification Laboratory; Département d'informatique; Faculty of Sciences; University of Geneva |
| 2003 may-june | • Invited professor at University Pau, Pau, France |
| 1998-1999 | • Head of Software Engineering Laboratory (sabbatical year of Prof. A. Strohmeier) |
| 1998 jan.-feb. | • Invited Professor at LIP6 University Pierre-Marie Curie, Paris, France |
| 1997-2002 | • Tenure Research Director and lecturer at Swiss Federal Institute of Technology, Lausanne (Software Engineering Lab., Prof. A. Strohmeier). |
| 1993-1996 | • First assistant and lecturer at Swiss Federal Institute of Technology, Lausanne (Software Engineering Lab., Prof. A. Strohmeier). |
| 1991-1993 | • Maitre-Assistant at University of Geneva. |
| 1989-1991 | • Post-Doc at University of Paris-South (LRI) (Prof. M.-C. Gaudel, FNRS grant for young researcher and advanced researcher nbr. 8220-028446). |
| 1984-1989 | • Assistant at University of Geneva. |
| 1981-1983 | • Professor of Mathematics at Geneva Engineering School. |
| 1980-1981 | • Application Engineer at Gespac S.A. Geneva, (computer engineering) |

Externally funded research projects

- Project Hasler CPS-MOVE: Cyber Physical Systems Modeling and Verification, 200.000, 2017-2019
- Project FNRS Stratos : Strategy based Term Rewriting for Analysis and Testing Of Software , 200.000.- 2015-2018.
- Project Toxicology: support by SCATH and Seco, 100.000.- 2014-2015.-2016
- Project CERN: PhD support on testing control system, 2014-2016.
- Project ESTATE: Embedded SysTem Automatic TEsting, support by Honeywell international, 110.000.- 2014-2015.
- Project SCIEIX : SARPOT: Secure and Ad hoc routing protocol based on a web-of-trust like trust management system, 80'000.- 2013-2014.
- Project FNRS BRINTA 2: Bringing Model Semantics to Software Applications, 200.000.- 2012-2014.
- Project FNRS BRINTA: Bringing Model Semantics to Software Applications, 200.000.- 2010-2012.
- Project FNR Luxembourg (co-authors: N. Guelfi, L. Lucio), MOVERE on verification of resilience, 200.000.-(100.000.- for UniGE) 2011-2014.
- Project Hasler Comedia, extension , 50.000.- 2009-2011.
- Project CORA (sub task of VERITY project), University of Luxembourg, 25'000.- 2008.
- Project Interreg TestIndus, 2008-2009 (Univ. Besançon , UniGE, LEIRIOS, CTI, CLIO), total env 1'880'000.- (100'000.- on 520.000.-used in Geneva).
- Project FNRS ISIS-RA: Integrated System Implementation and Specification for Reliable distributed Application (2006-2008) env 200'000.-
- Project Interreg Valid, 2006-2007 (Univ. Besançon , LEIRIOS, CTI), total env 500'000.- (45.000.- in Geneva University)
- Project Hasler Comedia, Model Checking techniques for Verification, 400.000.- 2007-2009
- Project Hasler BATICS, (S. Malandain, G. Falquet, D.Buchs), 406.000.-, 8.2005-7-2008.
- Project FNRS ISIS-RA: Integrated System Implementation and Specification for Reliable distributed Application 200'000.-
- Project COINF-UniGE: Nomad: location based wireless services (D.Buchs), 100.000.-, 4.2003-12.2003.
- Project Hasler VeDiSS, (A. Strohmeier, D.Buchs), 340.000.-, 8.2003-7-2006.
- project Interreg, TestUML, (A. Strohmeier, D.Buchs, B. Legear), 150.000.-, (11.2002-11.2004)
- Project FNRS (authors: D. Vernez IST, D. Buchs, D. Bauer Winterthur assurance, M. Guillemin IST), Modeling health risks induced by man-technical workplace interactions (1/2003-12/2003). 60'000.
- Project FNRS (author), Formal Methods for Concurrent Systems. (10/2002-9/2004). - - + complement from EPFL env.200.000
- Brazil CAPES Phd Thesis Project, venue of Sandro Costa for 1 year at EPFL and continuation, work on subtyping relations (july 2000- 2003)
- Project FNRS (authors: D. Vernez IST, D. Buchs, D. Bauer Winterthur assurance, M. Guillemin IST), Modeling health risks induced by man-technical workplace interactions (32-59158.99) (6/2000-6/2002). 213.400.- + complement from EPFL
- Project FNRS (author), Formal Methods for Concurrent Systems. (2000-61548.00 (10/2000-9/2002). 142.064.- - + complement from EPFL
- Project FNRS (author), Formal Methods for Concurrent Systems. (2000-053554.98) (10/1998-9/2000). 162.783.- + complement from EPFL
- Project FNRS (author with co-author Prof. P. Zannela), University of Geneva, Formal methods for concurrent Systems. (2000-047030.96) (10/1996-9/1998). 147.263.- + complement from EPFL
- Project EU Esprit, DeVa (Design for Validation) 20072, Executive board member and co-author, Partners: Newcastle, City, DRA, York, Ulm, Vienna, AVN, Toulouse, Paris, EPFL, 1995-1998, 400.000.-, financed by OFES.
- Project FNRS (co-author with Prof. P. Zannela), University of Geneva, Formal methods for concurrency. (2000-040583.94) (P. Racloz, J. Flumet, O. Biberstein, G. DiMarzo, M. Buffo, J. Hulaas,) (10/1994-9/1996). 184.836.-
- Project (requérant: B. Faltings, B. Choueiry, 2ème co-requérant D. Buchs), Scheduling in a distributed, uncertain and interactive environment, (SPP-IF 5003-34284) (1992-1994). env 200.000.-
- Project (co-author with J. Rolim), "Methodology for producing parallel probabilistic algorithm from specification", University of Geneva, on specification transformation for parallelization (SPP-IF 5003-034295) (M. Buffo, E. Urland)(10/1992-9/1994). 187.138.-
- Associate researcher, with "Laboratoire de Recherche en Informatique" of University of Paris-Sud (E. Pelz, N. Guelfi, F. Mourlin), Esprit project Calliban (BR-WG 6067) (WG 4 Munich, Milan, Paris)(7/1992-6/1995) financial support for traveling.

Externally funded research projects (continued)

- Project FNRS (co-author with Prof. P. Zannela), Formal methods for concurrency, University of Geneva, on object-orientation (21-32'286.91) and the development of the SANDS environment (P. Racloz, J. Flumet, O. Biberstein, L. Safavi). (10/1992-9/1994), 212'176.-

Teaching activities

National/International Schools/doctoral schools

- DSM-TP (Domain Specific Modeling, Theory and Practice) 2016, 6 hrs, august 2016, Geneva, Switzerland.
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2015, 6 hrs, august 2015, Antwerp, Belgium.
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2014, 6 hrs, august 2014, Antwerp, Belgium.
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2013, 6 hrs, sept 2013, Santiago di Compostella, Spain.
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2012, 4 hrs, sept 2012, Lisboa, Portugal.
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2011, 4 hrs, sept 2011, Lisboa, Portugal.
- DAS in Computer Science, Option Complementary en Informatique, Hasler Foundation, EPFL, UniGenève, Uni Fribourg, Uni Neuchatel, 2011-12, 24 hours on Theoretical computer Science.
- DSM-TP (Domain Specific Modeling, Theory and Practice) 2010, 6 hrs, sept 2010, Lisboa, Portugal.
- DAS in Computer Science, Option Complementary en Informatique, Hasler Foundation, EPFL, UniGenève, Uni Fribourg, Uni Neuchatel, 2010-11, 24 hours on Theoretical computer Science.
- 3eme cycle romand, 'Testing' Geneva, October 2007.
- Didier Buchs, Functional Testing of Object Oriented Software, Industrial Tutorial on Testing, Formal methods, 99, Toulouse 20-24 september, 1999.
- Organizer of PostGraduate Course on Software engineering: 94-95 Topics: Software Life-cycle, Formal Methods, Testing, O-O Methods, Reliability. 250 teaching hours with 10 lecturers from different countries,

Lectures (Bsc/Msc)

- Formal Tools for Modelling Systems, University of Geneva: 2003-now Topics: Petri Nets, Logic, Temporal Logic,... 2nd year, 28 teaching hours/year
- (Semantics of) Programming Languages, University of Geneva: 2003-now Topics: Logic programming, Functional Languages and Semantics of Languages 2nd year, 28 teaching hours/year
- Compiler and Interpret, University of Geneva: 2012-2015 Topics: Parsing algorithms (LL(1),LR(0),LR(1)), code generation, optimisation, transformational semantics, 3rd year, 28 teaching hours/year
- Software Engineering Course, University of Geneva: 2004-now Topics: RUP, UML object oriented methods and notations. 3rd year, 28 teaching hours/year
- Software Engineering Course, University of Geneva: 2001-2004 Topics: Fusion, UML object oriented methods and notations. 3rd year, 56 teaching hours/year
- Modeling and Verification, University of Geneva: 2005-now Topics: Algebraic Modeling techniques, testing, MDA 4st year, 28 teaching hours/year since 2007 mandatory in 3rd year, since 2012 mandatory in 4st year.
- (Option) Advanced Formal Tools, University of Geneva: 2005-now Topics: CPN Builder (colored nets), JML (Java modeling Language) ESCJML, CO-OPN 4st year, 28 teaching hours/year
- (Option) Concurrency and Distribution, University of Geneva: 2005-now Topics: LTL,CLT,Buchi Automata, BDD 4st year, 28 teaching hours/year
- Practical Projects:1996-2001 Animation and evaluation of practical 3rd year Software Engineering projects (50-70 students in groups).
- Software Engineering Course, EPFL: 1998-99 Topics: Fusion, UML object oriented methods and notations. 84 teaching hours
- Formal Methods for Software Development: 1998-2002 Topics: Elementary semantics, Reliability, Testing, Petri Nets, Algebraic Abstract Data Types, Proof Techniques, Temporal Logic, Prototyping. 56 teaching hours

Teaching activities (continued)

- Advanced Software Engineering Course, EPFL: 1994-97 Topics: Life-cycle, Reliability, Testing, Petri Nets, Algebraic Abstract data types, Functional Languages. 56 teaching hours

Phd. Thesis in progress (Director/co-director)

- Eric Harth, Program Interpretation, expected 2018, co-director Ph. Dugerdil.
- Dimitri Racordon, Verification of complex systems, expected 2019.
- Stefan Klikovits, Testing control systems, expected 2019.
- Sahar Aljalbout, Modeles et outils pour la representation et l'interconnexion de ressources de connaissances, expected 2019, co-director G. Falquet.

Phd. Thesis completed

- Edmundo Lopez, Symbolic Model-checking with Set Rewriting, june 2015.
- Javier Belmonte, (co-director Ph Dugerdil), december 2014, university of Geneva.
- Alexis Maréchal, Unifying the syntax and semantics of modular extensions of Petri nets, july 2013, university of Geneva.
- Steve Hostettler, High-Level Petri Net Model Checking : The symbolic way, (dec 2011) PhD thesis, University of Geneva.
- Odorico von Susani, (co-director Ph Dugerdil), Dynamic Evolution in Distributed Applications (nov 2011), PhD thesis, University of Geneva.
- Matteo Risoldi, A Methodology For The Development Of Complex Domain Specific Languages (2010), PhD thesis, University of Geneva.
- Ang Chen, Business Process Formal Models A Multi-Dimensional Compositional Approach for Business Process Semantic Engineering, September 2009, Ph.D. Thesis, University of Geneva.
- Luis Pedro, A Systematic Language Engineering Approach for Prototyping Domain Specific Modelling Languages. 23th january. 2009, Ph.D. Thesis, University of Geneva.
- Levi Lucio, SATEL – A Test Intention Language for Object-Oriented Specifications of Reactive Systems, may 2008, Ph.D. Thesis, University of Geneva.
- Adel Besrou, Object-Oriented Approach for Dynamic System Modelling and Simulation, Ph.D. Thesis, no, Ecole Polytechnique Fédérale de Lausanne, Département d'informatique, CH-1015, Lausanne, Suisse, 2004.
- David Huerzeler, Flexible Subtyping Relations for Component-Oriented Formalisms and their Verification, Ph.D. Thesis, no, Ecole Polytechnique Fédérale de Lausanne, Département d'informatique, CH-1015, Lausanne, Suisse, 2004.
- Stanislav Chachkov, Generation of Object-Oriented programs from CO-OPN Specifications, Ph.D. Thesis, no, Ecole Polytechnique Fédérale de Lausanne, Département d'informatique, CH-1015, Lausanne, Suisse, january 2004.
- Giovanna Di Marzo Serugendo, "Stepwise Refinement of Formal Specifications Based on Logical Formulae: from COOPN/2 Specifications to Java Programs," Ph.D. Thesis, no 1931, Ecole Polytechnique Fédérale de Lausanne, Département d'informatique, CH-1015, Lausanne, Suisse, 1999.
- Cécile Péraire, "Formal Testing of Object-Oriented Software: from the Method to the Tool," Ph.D. Thesis, no 1904, Ecole Polytechnique Fédérale de Lausanne, Département d'Informatique, 1015 Lausanne, Switzerland, 1998.
- Stéphane Barbey, "Test Selection for Specification-Based Unit Testing of Object-Oriented Software based on Formal Specifications", PhD thesis, no 1753, Ecole Polytechnique Fédérale de Lausanne, Département d'Informatique, 1015 Lausanne, Switzerland, December 1997.
- Olivier Biberstein, "CO-OPN/2: An Object-Oriented Formalism for the Specification of Concurrent Systems." Ph.D. Thesis, University of Geneva, July 1997.
- Mathieu Buffo, "Contextual Coordination: a Coordination Model for Distributed Object Systems," Ph.D. Thesis, University of Geneva, July 1997.
- Jarle Hulaas, An Incremental Prototyping Methodology for Distributed Systems Based on Formal Specifications. PhD thesis, no 1664, Ecole Polytechnique Fédérale de Lausanne, Département d'Informatique, 1015 Lausanne, Switzerland, June 1997.
- Flumet Jacques, "Outils de développement de spécification pour systèmes concurrents", Thèse en Informatique, Université de Genève, juillet 1995, 198 pages.
- Guelfi Nicolas, "Formalismes modulaires de spécification pour systèmes concurrents", Thèse en Informatique, Université de Paris-Sud, septembre 1994, 270 pages.

Teaching activities (continued)

- Racloz Pascal, "Symbolic Proof of CTL formulae on various kind of nets", Thèse en Informatique, Université de Genève, march 1994, 182 pages.

PhD thesis committee

- Francesco De Angelis, A Logic-Based Coordination Middleware for Self-Organising Systems: distributed reasoning based on many-valued logic, PhD, Geneva, july 2017.
- Hadrien BRIDE, Verifying Modal Specifications of Workflow Nets using Constraint Solving and Reduction Methods, 24 oct. 2016.
- Yasir Itmtiaz Khan, PhD Thesis , Model-Driven development, Resilient Systems, Luxembourg, 2015.
- Ala Eddine BEN SALEM, Improving the model-checking of stutter invariant LTL properties, 25 sept. 2014.
- Yasir Itmtiaz Khan, Intermediate Thesis Evaluation, Model-Driven development, Resilient Systems, Luxembourg, 2012, 2013.
- Bruno Barocca, Intermediate Thesis Evaluation, Verification of Transformation, UniNova, Lisbon, 2012.
- Duy-Tung Nguyen, Vérification symbolique de modèles à l'aide de systèmes de ré-écritures dédiés, PhD Thesis, Université d'Orléans, 2011.
- Nabil Hammeurlain, rôle-components for the coordination and interoperability of software agents, Thèse d'habilitation, Université de Pau, january 2011.
- Moez Yeddes, Approche formelle de vérification dans le cadre des systèmes à événements discrets et des systèmes hybrides, Thèse d'habilitation, Paris VI, octobre 2010.
- Barbara Gallina, Prisma: a software product line-oriented process for the requirements engineering of flexible transactional models, Ph.D. Thesis, Université du Luxembourg, avril 2010.
- Franck Pommereau, Algebras of coloured Petri nets and their applications to modelling and verification, Thèse d'habilitation, Paris XIII, february 2010.
- Alexandre Hamez, Génération efficace de grands espaces d'états. décembre 2009, univ Paris 6.
- Alban Linard, Sémantique paramétrable des Diagrammes de Décision : une démarche vers l'unification, septembre 2009, Ph.D. Thesis, univ Paris 6.
- Benoît Ries SESAME: a Model-driven Process for the Test Selection of Small-Size Safety-Related Embedded Software, Ph.D. Thesis, University of Luxembourg, fev 2009.
- Olivier Buchwalder, A Domain-Specific Language for Modeling and Implementing Web Applications, 5 february, EPFL 2009.
- Fabrice Mourlin, La mobilité : une autre approche logicielle, Thèse d'habilitation, Paris XIII, November 2008.
- Christophe Pajault, Model Checking parallèle et réparti de réseaux de Petri colorés de haut-niveau. Application à la vérification automatique de Model Checking parallèle et réparti de réseaux de Petri colorés de haut-niveau: Application à la vérification automatique de programmes Ada concurrents, Paris 6, june 2008.
- Slavisa Markovic, Model Refactoring using Transformations, EPFL, february 2008.
- Duy Vo Duc, Model checking for Synchronous Java, EPFL, 2007.
- Rodrigo Garcia, Modelling and Monitoring Industrial Automation Systems – with IEC 61346 and Sequential Function Charts, EPFL, 2006.
- Bouquet Fabrice, Sémantique interprétative de spécifications formelles en animation symbolique et generation de tests à partir de modèles, Habilitation à Diriger des Recherches, Université de Franche-Comté, 2005.
- Frédéric Gilliers, Développement par prototypage et génération de code à partir de LfP, un langage de modélisation de haut niveau, 2005, Université de Paris 6, (Jury uniquement) .
- Nicolas Vacelet, Evaluation de notations formelles de spécifications par systèmes de contraintes, Université de Franche-Comté, 2005.
- Cécile BUI THANH, Modèles Orientés-Objet pour la Verification de Systèmes Concurrents , Université de Paris 12, 2004.
- Chrislain Razafimahefa A programming Model and execution environment for autonomous systems, Unversity of Geneva, july 2004.
- Nicolas Rapin: Validation de spécifications à base d'automates par des techniques de dépliage et d'exécution symbolique, Rapporteur, Université d'Evry, 1 juillet 2004, France
- Dan Regep, LfP: un langage de spécification pour supporter une démarche de développement par prototypage pour les systèmes répartis , Rapporteur, décembre 2003, Université de Paris 6.

Teaching activities (continued)

- Ousmane Sy, Spécification comportementale de composants CORBA, président du jury de Thèse, Université de Toulouse, mars 2001.
- David Vernez: Analyse de risque lors de conception de projet novateurs: application au Swissmetro, Ecole Polytechnique Federal de Lausanne, Departement d'Electricité, 1015 Lausanne, Switzerland, February 1999.
- Fabrice Kordon, "Prototypage d'Applications Coopératives Réparties et d'Environnements de Génie Logiciel", Habilitation à Diriger des recherches, Université P & M Curie, Décembre 1998 (rapporteur)
- William El Kaim: Méthodologie de structuration, de placement et d'exécution de composants logiciels dans les applications réparties et parallèles. (Mise en oeuvre avec des applications construites selon le paradigme client-serveur sur des architectures matérielles hybrides), Equipe Systèmes Répartis Coopératifs du LIP6, Université de Paris 6, décembre 1997. (rapporteur).
- Agnès Arnould: "Test à partir de spécifications de structures bornées: Une théorie du test, une méthode de sélection, un outil d'assistance à la sélection", Université de Paris-Sud, Janvier 1997, (rapporteur).
- Beat Liver: "A functional Model of Software and its Application in Troubleshooting, Design and Reuse", Thèse en Informatique, EPFL, june 1996, (co-rapporteur).
- Anne Deo-Blanchard: "Séquence-spécifications algébriques". Application à une sémantique pour les itérateurs, Université de Paris-Sud, Septembre 1994, (rapporteur).
- Fabrice Mourlin, Conception et réalisation d'outils d'aide à la programmation sur réseaux de transputers, Université de Paris- Sud, décembre. 1992, (juré).
- Jacques Mouttet, Une approche multivaluée du concept de croyance: représentation et raisonnement, Université de Genève, nov. 1992, (rapporteur).

Master/Bachelor thesis supervised

Supervision of more than 40 bachelor and master thesis.

Academic Activities

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| 2006-now | • Member of Scientific Committee of CUI, representative of Computer Science Department. |
| 2012-13 | • Member of the Commission for the creation of a joint Master Degree at CUI |
| 2004-now | • Faculty council representative (Conseil participatif) for Computer Science department |
| 2009-2013 | • Member of COPIL (Comité de pilotage), Hasler Foundation action for Diploma of Advanced studies in Computer Science for Gymnasium Teacher |
| 2010 | • Member of the Commission for Computer Science Department Program Evaluation |
| 2008 | • Member of the Commission for a joint Master Degree with HES (HEG, HEPIA) |
| 2003-2006 | • Student advisor (decision on equivalence on student entry,...) |

Research Activities

Summarized main research interests

Since the beginning of my research activity I explored mainly two directions: formal modeling of systems and development of techniques for the verification of software systems. The purpose of these researches can be briefly summarized as the attempt to master the intrinsic complexity of computer systems. They are studied formally in both dimensions of description (modeling) and behavioral semantics. As these activities have a formal mathematical basis I made a significant effort to teach these domains to students. Moreover, as the finality of these techniques is to use them in practice, my team developed several tools for supporting the modeling of complex systems, developing case studies and also for their concrete verification using model checking or test generation.

- 1985-1989 • Formal modeling and prototyping of user interfaces using Algebraic Petri Nets, this work introduces some new concepts of high-level Petri nets and also an original principle for the modeling and refinement of MVC user interface architectures.
- 1990-1994 • CTL model checking using a new data structure called predicate structure was performed, this work was leading to interesting results such as procedural convergence in some non-trivial cases. We are looking forward to combine these techniques with the new principles we recently developed with decision diagrams. The main drawback of non unicity of the predicate structures seems to be overcome in this context.
- 1991-1999 • High level modeling with object orientation, we extend algebraic Petri nets (CO-OPN: Concurrent Object-Oriented Petri Nets) with an original composition mechanism based on atomic synchronization. We also treat object orientation and a component notion in an original way. This work open a lot of new principles for the modeling of concurrent systems. Tools such as CoopnTools was built as well as its successor CoopnBuilder. We gave using CO-OPN, a semantics to the Actor languages and to some distributed algorithms showing its interest for modeling complex concurrent systems.
- 1994-1997 • Prototyping formal models by automatic synthesis of code architecture from high-level modeling, particular emphasis was made on the evolutionary aspects where pieces of hand-written code can smoothly replace automatically generated code.
- 1993-1999 • We extend existing theories of testing from formal models to concurrent state based systems and object oriented systems. Practical test selection methods have been implemented using advanced logic programming.
- 1999-2004 • Prototyping hierarchical formal models by automatic synthesis of code from high-level modeling, the complex atomic CO-OPN synchronization mechanism was studied from an algorithmic point of view. We experiment these principles on several concrete examples.
- 1999-2004 • We studied Risk analysis as an application of modular Petri nets to risk analysis at the workplace, these research was a fruitful collaboration with social medicine.
- 1999-2004 • Composition and sub typing, through a semantic definition of components and their composition we explored original notions of semantic observational types and sub typing relations.
- 2004-2008 • Language for expressing user testing intention, this research extend the previous work on testing with new principles for expressing the test user intentions. We also cover the robustness testing which seems of utmost interest for practitioners but was neglected in most of the research on automation of test selection.
- 2003-2013 • Domain specific languages, we develop original mechanisms to compose metamodels and their associated transformations using parametric metamodels and parametric transformations. This line of research was also used for the development of our own modeling language and some concrete examples such as the 3D modeling of the control software of the CMS experiment at CERN.

Research Activities (continued)

- 2007-*
- Symbolic Model Checking was developed with the idea of verifying high level models with a reasonable amount of work for the user. In particular we propose to separate the model to the informations for performing efficiently model checking (clustering, anonymization, partial unfolding). The introduction of new kind of decision diagrams (Σ -DD) based on a generalization of the Shannon decomposition principles allow us to perform efficiently model checking for models with huge combinatorial explosion of states (around 4^{500} symbolic states). We are currently exploring the systematic use of rewriting of set of terms principles based on decision diagrams and operational control based on strategies as a metalevel in model checkers. A tool, called ALPINA, was implemented. We also launch a model checking contest in the conference Petri Nets in order to be able to compare existing model checkers on significant benchmarks. Our tool performed relatively well, but most remarkably perform on most of the models which is not the case for all the other tools in competition.
- 2010-*
- Unification of modular Petri Nets using an extension of the CO-OPN composition operators. This model seems to gather all modular extensions of Petri nets in an elegant way. The interest of this approach is also to contribute to the standardization efforts made in the context of the ISO organization.

6 most significant publications

Publications: 90 in international reviewed conferences, 25 in journals, 5 books or journal issues edited, 80 technical reports.

Qualitative evaluation according to google scholar: H-index 18, I-10 index-45.

- Nicolas Sedlmajer, Didier Buchs, Steve Hostettler, Alban Linard, Edmundo López Bóbeda, Alexis Marechal: A Domain Specific Language Approach for Genetic Regulatory Mechanisms Analysis. T. Petri Nets and Other Models of Concurrency 6: 123-145 (2012), LNCS.
- Steve Hostettler, Alexis Marechal, Alban Linard, Matteo Risoldi, Didier Buchs (2011) High-Level Petri Net Model Checking with ALPiNA, Fundamenta Informaticae 113: 3-4, pp 229-264 Feb. 2012 (Fundamenta Informaticae: 0.55 (top 47.25%))
- Olivier Biberstein, Didier Buchs, and Nicolas Guelfi; Object-oriented nets with algebraic specifications: The CO-OPN/2 formalism. In G. Agha, F. De Cindio and G. Rozenberg, editors, Advances in Petri Nets on Concurrent Object-Oriented Programming and Petri Nets, volume in Lecture Notes in Computer Science. Springer-Verlag, LNCS 2001, pp. 70-127. (Advances in Petri Nets: 1.41 (top 10.64%))
- Didier Buchs and Nicolas Guelfi, "A Formal Specification Framework for Object-Oriented Distributed Systems," IEEE Transaction on Software Engineering, vol. 26, no. 7, July 2000, pp. 635-652. (2011 impact factor of 1.980)
- Stéphane Barbey, Didier Buchs and Cécile Péraire; "A theory of Specification-Based Testing for Object-Oriented Software," EDCC2, Taormina, LNCS (Lecture Notes in Computer Science) 1150, EPFL-DI-LGL, 1996, pp. 303-320, october 1996.
- Buchs Didier, Guelfi Nicolas: "A Concurrent Object Oriented Petri Nets Approach for system specification", 12th International Conference on Application and Theory of Petri Nets, Aarhus Denmark, june 1991,(M. Silva eds.),pp. 432-454.

Scientific Activities

Program Committee

- Program Committee of Petri Nets 2019, june 2019, Aachen, Germany.
- Program Committee of Petri Nets 2018, june 2018, Bratislava, Slovakia.
- Program Committee of Petri Nets 2017, june 2017, Zaragoza, Spain.
- Program Committee of RSP'2016, Int. Conf. on Rapid System Prototyping, part of ESWeek, October 6-7, 2016, Pittsburgh, PA, USA.
- Program Committee of SERENE 2016, sept 2016, Goteborg.
- Program Committee of PNSE 2016, june 2016, Torun, Poland.
- Program Committee of Petri Nets 2016, june 2016, Torun, Poland.
- Program Committee of RSP'2015, Int. Conf. on Rapid System Prototyping, part of ESWeek in Amsterdam 8-9 october 2015.
- Program Committee of SERENE 2015, sept 2015, Paris.
- Program Committee of PNSE 2015, june 2015, Brussel, Belgium.
- Program Committee of Petri Nets 2015, june 2015, Brussels, Belgium.
- Program Committee of VOLT 2015,
- Program Committee of SERENE 2014, june 2014, Budapest.
- Program Committee of PNSE '014, june 2014, Tunis, Tunisia.
- Program Committee of Petri Nets 2014, june 2014, Tunis, Tunisia.
- Program Committee of VOLT 2013, VOLT 2014, Verification Of Model Transformation, june 17, Budapest Hungary.
- Program Committee of PNSE'13, Petri Nets and Software Engineering, june 2013, Milan Italy.
- Program Committee of PNSE'12, Petri Nets and Software Engineering, june 2012, Hambourg, Germany.
- Program Committee of QUATIC 2012, 8th International Conference on the Quality of Information and Communications Technology, Lisbon, Portugal, 3 to 6 September 2012
- Program Committee of MPM'12, 6th International Workshop on Multi-Paradigm Modeling - Satellite event of the ACM/IEEE 15th International Conference on Model Driven Engineering Languages and Systems, October 1, 2012 Innsbruck, Austria
- Program Committee of Synthesis, Verification, and Analysis of Rich Models (SVARM) 2011, 1-3 April 2011, Saarbruecken, Germany.
- Program Committee of RSP'2012, Int. Conf. on Rapid System Prototyping, October 11-12, 2012 part of ESWeek in Tampere, Finland.
- Program Committee of SERENE 2011, Software Engineering for Resilient Systems, Geneva, september 29-30, 2011.
- Program Committee of SUMo'2011, International Workshop on Scalable and Usable Model Checking for Petri Nets and other models of concurrency , Newcastle, june 2011.
- Program Committee of CompoNet 2011, Newcastle, june 2011.
- Program Committee of RSP'2011, Int. Conf. on Rapid System Prototyping, 24-27 May, 2011 Karlsruhe, Germany.
- Program Committee of Petri Nets 2011, Newcastle, UK, june 2011.
- Program Committee of SERENE 2010, Software Engineering for Resilient Systems, London, April 13-16, 2010 .
- Program Committee of RSP'2010 , Int. Conf. on Rapid System Prototyping, Jun 8-11, 2010, Fairfax, Virginia, USA
- Program Committee of PNSE-10, Petri Nets and Software Engineering, june 2010, Braga, Portugal.
- Program Committee of SUMo'2010, International Workshop on Scalable and Usable Model Checking for Petri Nets and other models of concurrency , Braga, june 2010.
- Program Committee of MODEVVA09,
- Program Committee of RSP'09 , Int. Conf. on Rapid System Prototyping, Paris France
- Program Committee of OrgMod09, june 2009, Paris, France
- Program Committee of PNSE09, Petri Nets and Software Engineering, june 2009, Paris, France.
- Program Committee of the Workshop on Petri Net Tools and Applications, Marseille, march 2008 (PNTAP'08)

Scientific Activities (continued)

- Program committee of International Conference on Application and theory of Petri Nets and other models of Concurrency, Xian, China, june 2008
- Program Committee/Steering Committee, Conf. on Rapid System Prototyping, Monterey, USA, June 2008.
- Program Committee of PNDS'08 International Workshop on Petri Nets and Distributed Systems, Xian june 2008.
- Program Committee of Serene'08, Newcastle 08.
- Program Committee of MODEVVA08,
- Program Committee of MPM'11, 5th International Workshop on Multi-Paradigm Modeling ACM/IEEE 14th International Conference on Model Driven Engineering Languages and Systems, October 16-21, 2011 Wellington, New Zeland
- Program Committee of PNDS-08:, International Workshop on Petri Nets and Distributed Systems, Xi'an, China, June 23-24, 2008
- Program Committee of PNTAP'08,
- Program committee of International Conference on Application and theory of Petri Nets and other models of Concurrency, Siedlice, Polland, june 2007
- Program committee of Petri Nets and Software Engineering, Siedlice, Poland, june 2007
- Program Committee Conf. on Rapid System Prototyping, Porto-Alegre, Brasil, May 2007.
- Program Committee Conf. Rapid Integration of Software Engineering, Luxembourg Nov. 2007.
- Session Chair RST07, Geneva, june 2007.
- Chair and Program Committee of Conf. RISE, Geneva, 2006.
- Chair and Program Committee Conf. on Rapid System Prototyping, Chania June 2006.
- Program committee Workshop Modelling of Objects, Components, and Agents (MOCA'06), Turku,june 2006
- Program committee of International Conference on Application and theory of Petri Nets, Turku, june 2006
- Program Committee Conf. on Rapid System Prototyping, Montreal June 2005.
- Program Committee Conf. Rapid Integration of Software Engineering, Hieraklion Sept. 2005.
- Program committee of International Conference on Application and theory of Petri Nets, Bologna, june 2004
- Program committee of AFADL, Besançon, june 2004
- Program Committee Conf. on Rapid System Prototyping, Geneva June 2004.
- Program committee Workshop Modelling of Objects, Components, and Agents (MOCA'04), Aahrus,october 2004
- Program committee of Conference 'Modélisation des Systèmes Réactifs', Nancy, october 2003.
- Program committee of Conf. on Rapid System Prototyping,San-Diego, june 2003.
- Program committee of International Conference on Application and theory of Petri Nets, Eindhoven, june 2003
- International Conference on SOFTWARE ENGINEERING AND FORMAL METHODS; Brisbane - Australia; 22nd - 27th September, 2003
- Program committee of Conf. on Rapid System Prototyping,Darmstadt, june 2002.
- Program committee of, Workshop on Software Engineering and Formal Methods, Adelaide june 2002.
- Program committee Workshop Modelling of Objects, Components, and Agents (MOCA'02), Aahrus,June 2002
- Program committee of International Conference on Application and theory of Petri Nets, Newcastle, june 2001
- Program committee Workshop Modelling of Objects, Components, and Agents (MOCA'01), Aahrus,June 2001
- Program committee Workshop on 'Concurrency in Dependable Computing', Newcastle, june 2001.
- Program committee of Conf. on Rapid System Prototyping, Monterey, june 2001.
- Program committee of conference 'Modélisation des Systèmes Réactifs', Toulouse, october 2001.
- Member of the editorial board of TSI special issue on testing, 2001

Scientific Activities (continued)

- Program committee ICSSEA (International Conference on theory and Application of Software Engineering), Paris, december 2000.
- Member of editorial board of special issue of LOBJET on object oriented formal methods, 1999.
- Program committee ICSSEA (International Conference on theory and Application of Software Engineering), Paris, december 1999.
- Program committee DeVa project 1996,1997,1998.
- Program committee of International Conference on Application and theory of Petri Nets, Lisbon, 1998.
- Program committee, Z twenty years on, 10-12 oct. 1995, Nantes, 2 papers.

referee (without Program committee)

- Journal of Software and Systems Modeling, 2016
- Science of Computer Programming, SCICO, 2016
- IEEE Trans. on Reliability, march 2013
- Reviewer Fundamentae Informaticae, 2010
- Reviewer Fundamentae Informaticae, 2009
- Review for book publication by presses polytechniques, Hermes, and kluwer 2003.
- Review Processing letters, january 2001
- IEE Software, october 2000, Referee.
- IEEE Transaction on Software Engineering, december 2000, RSP special issue
- Review TACS 01, june 2000.
- IEEE transaction Software Engineering, december 1999.
- IEEE Software Engineering, january 1998.
- International Conference on Application and theory of Petri Nets, Williamsburg, june 1999
- Referee DeVa project 1996,1997,1998.
- Parrallel and Distributed Technology: Systems and Applications, june 1997.
- Coordination 97, march 1997.
- IEEE Software Engineering, october 1997.
- EDCC-2, Taormina, 1 paper, 2-4 October 1996.
- HICSS-30, 1996, 2 papers.
- Parrallel and Distributed Technology: Systems and Applications, december 1996.
- Seventh International Symposium on Software Reliability Engineering, ISSRE '96, (30 october-2 november), White Plains, may 1995.
- Sixth International Symposium on Software Reliability Engineering, ISSRE '95, (24-27 october, Toulouse), june 1995.
- IEEE Parallel & Distributed Technology, 1 paper, november 1995.
- Software Concepts and Tools, Springer Verlag, 1 paper, october 1995.
- Journal of system and software, june 1995, 2papers.
- IWSSD-7 7Th Int. Work. On Software Specification and Design, December 1993, march 1993.
- Projet PRC Informatique (France) referee for 1 project , April 1993.
- Computers and Artificial intelligence, november 1993.
- 3rd Rapid Prototyping (RSP), N.C, USA, ..june, 1992, march 1992, 2 papers.
- Formal Aspects of Computing, Springer, August 1991.
- IEEE Software, December 1990
- IEEE Software, April 1988
- IEEE Software, July 1987
- IEEE Software, October 1987

Workshop and Conference organizer

- DSM-TP (Domain Specific Modeling, Theory and Practice) 2016, Organizer , Geneva, Switzerland.
- General Chair of Model Checking Contest @ Petri Nets 2016, june 2016, Torun.

Scientific Activities (continued)

- General Chair of Model Checking Contest @ Petri Nets 2015, June 2015, Brussels.
- General Chair of Model Checking Contest @ Petri Nets 2014, June 2014, Tunis.
- General Chair of Model Checking Contest @ Petri Nets 2013, June 2013, Milan.
- General Chair of Model Checking Contest @ Petri Nets 2012, June 2012, Hambourg.
- General Chair of Model Checking Contest @ Petri Nets 2011, June 2011, Newcastle.
- Program Committee Chair of Serene'11, Geneva, September 2011.
- General Chair, SUMo2011, Kanazawa Japan (relocated to Newcastle).
- General Chair, SUMo2010, Braga Portugal.
- Industrialiser le test de logiciel, April 2010, University of Geneva (50 participants from industry).
- SMV Seminar, September 2008, Vercorin Suisse (30 participants).
- Organizer and chair of Conf. RISE, Geneva, 2006.
- Organizer of Conf. Rapid System Prototyping, Geneva, 2004.
- Organizer of the Postgraduate Course on Software Engineering, EPFL, 1995. (250 teaching hours, 60 students with practical project)
- Scientific day on Formal Methods (ConForm), EPFL, Lausanne, June 1995., June 1996., June 1997, June 2001, July 2002.
- Scientific day on Software Engineering, EPFL, Vercorin VS, June 1998, June 2000.
- Models, Formalisms and Methods for Object Oriented Distributed Computing Workshop ECOOP Conference 1997, Jyväskylä, Finland, June 1997
- Working seminars at CUI 1992-1993.

Scientific administration

- | | |
|-----------|---|
| 2006-now | • LNCS Transactions on Petri Nets and Other Models of Concurrency (ToPNoC) Editorial Board, Springer Verlag . |
| 2014-now | • MPM4CPS COST action management committee . |
| 2009-2013 | • RichModels COST action management committee . |
| 2011-2014 | • Serene ERCIM working group Chairman |
| 2011-now | • Serene Conference Steering Committee |
| 2006-now | • RSP Conference Steering Committee |
| 1999-2003 | • Member of the editorial board of TSI journal. |
| 1999 | • Scientific committee LAMI du CNRS, Université d'Evry, juillet 1999 (member of the scientific board). |

Invited talks

- D. Buchs: invited presentation at the MeFoSyLoMa, Paris 6 March 2015, "Sigma DD and StrataGEM".
- D. Buchs: Seminar at the CamPAM workshop, January 2015, Bellairs research institute, Barbados. "Multi-view modelling"
- D. Buchs: Seminar at the DSM-TP fourth doctoral symposium, September 2014, Antwerp (Portugal), title of the talk: " Algebraic Abstract data types for DSML".
- D. Buchs: Seminar at the DSM-TP third doctoral symposium, September 2013, Lisbon (Portugal), title of the talk: " Algebraic Abstract data types for DSML".
- D. Buchs: Seminar at the DSM-TP second doctoral symposium, September 2012, Lisbon (Portugal), title of the talk: " DSML Verification".
- D. Buchs: Seminar at the DSM-TP first doctoral symposium, September 2011, Lisbon (Portugal), title of the talk: " DSML Verification".
- S. Hostettler, M. Risoldi: Seminar at the DSM-TP doctoral symposium, September 2010, Lisbon (Portugal), title of the talk: "Symbolic Model Checking of High Level Petri Nets".
- D. Buchs: Seminar at the DSM-TP doctoral symposium, September 2010, Lisbon (Portugal), title of the talk: " DSML Verification".
- D. Buchs, A. Marechal, S. Hostettler: AIPiNA: An Algebraic Petri Net Analyzer, Tresor group meeting EPFL, 2010.
- Didier Buchs, Tendances et résultats de la recherche en test logiciel, Séminaire Test, April 2010, University of Geneva.

Scientific Activities (continued)

- Didier Buchs, Projet Interreg Valid, La roche sur Foron , Mai 2009.
- Didier Buchs, DSL Engineering, Verity workshop, nov 2009, Newcastle.
- Didier Buchs, Systématisation des tests: de l'utopie à la réalité, Software & Systems Quality Conferences 2008 20th May 2008, Hôtel des Bergues, Genève, Suisse
- Didier Buchs, Introduction representation of term algebra with SDD , SMV seminar, June 2007.
- Didier Buchs, Uni Nova Lisboa, Lisboa, Test selection methods, june 27 2007
- Didier Buchs, MeFoSyloMa meeting, Test selection methods, Paris, march 9th 2007
- Didier Buchs, Introduction to SATEL semantics, SMV seminar, December 2006.
- Didier Buchs, Testing Object Oriented Software, MASI, january 1998.
- Didier Buchs, "Méthodes formelles pour le développement et la vérification de logiciels," Neuvième journées internationales, Le génie logiciel et ses applications, Revue génie logiciel, November 18-21 1996.
- Didier Buchs. , "Object Oriented Specification based Testing", DeVa Review meeting, Brussel, February 1995.
- Didier Buchs. , "Object Oriented Specification based Testing", IFIP, WG 10.4, 29th meeting, 'Object Orientation for Dependability', 19 -30 january, La Martinique, France.
- Biberstein Olivier, Buchs Didier , Di Marzo G.; "An Object Oriented Specification Language based on Hierarchical Algebraic Nets" WORKSHOP on Object Orientation in Petri Nets and other Models, 12-13 of September 1994, LRI, Paris.
- Buchs Didier ; "Hierarchical Algebraic Nets" Esprit CALIBAN WORKSHOP , 21 juin 1994, Zaragoza.
- Didier Buchs, Modular Specification of Concurrent Systems, Séminaire lab. génie logiciel, EPFL, Février 1993.
- Didier Buchs, Algebraic net Semantics, "Groupe: compositionnalité, sémantique, spécification et concurrence", (Prof E. Pelz, L.R.I. Paris-Sud) , Juin 1992.
- Didier Buchs, Observational Equivalence of Algebraic nets, "Groupe: compositionnalité, sémantique, spécification et concurrence", (Prof E. Pelz, L.R.I. Paris-Sud) , Janvier 1992.
- Didier Buchs, Object oriented Petri Nets, juillet 1990, Séminaire du CUL., Genève
- Didier Buchs, Object oriented Petri Nets, Séminaire Groupe Génie logiciel (Prof. M.-C. Gaudel, L.R.I. Paris-Sud) , novembre 1990.
- Didier Buchs, EM2/SPECIF, Séminaire Groupe Génie logiciel (Prof. M.-C. Gaudel, L.R.I. Paris-Sud) , novembre 1989.

Didier Buchs, Publications

Publications: 101 in international reviewed conferences, 28 in journals, 5 books or journal issues edited, 80 technical reports.

Qualitative evaluation according to google scholar: H-index 18, I-10 index-45 (sept. 2018).

Journals and book chapter

- [1] Bruno Barroca and Vasco Amaral and Didier Buchs, Semantic languages for developing correct language translations, *Software Quality Journal*, 26(2), pp: 417-453. 2018, <https://doi.org/10.1007/s11219-016-9352-4>
- [2] Nenad Savic, Dimitri Racordon, Didier Buchs, Bojan Gasic and David Vernez, TREXMO: A Translation Tool to Support the Use of Regulatory Occupational Exposure Models, *Ann. Occup. Hyg.*, 2016, pp. 1718.
- [3] Maximilien Colange, Dimitri Racordon, Didier Buchs: Computing Bounds for Counter Automata. *ECEASST 72* (2015)
- [4] Alexis Marechal, Didier Buchs: Generalizing the Compositions of Petri Nets Modules. *Fundam. Inform.* 137(1): 87-116 (2015)
- [5] Mihai-Lica Pura, Didier Buchs: Using Symbolic Techniques and Algebraic Petri Nets to Model Check Security Protocols for Ad Hoc Networks. *TOPNOC 2015*: -
- [6] Maximilien Colange, Dimitri Racordon, Didier Buchs: A CEGAR-like Approach for Cost LTL Bounds. *CoRR* abs/1506.05728 (2015)
- [7] Fabrice Kordon, Alban Linard, Marco Beccuti, Didier Buchs, Lukasz Fronc, Lom-Messan Hillah, Francis Hulin-Hubard, Fabrice Legond-Aubry, Niels Lohmann, Alexis Marechal, Emmanuel Paviot-Adet, Franck Pommereau, César Rodríguez, Christian Rohr, Yann Thierry-Mieg, Harro Wimmel, Karsten Wolf: Model Checking Contest @ Petri Nets, Report on the 2013 edition. *CoRR* abs/1309.2485 (2013)
- [8] Fabrice Kordon, Alban Linard, Didier Buchs, Maximilien Colange, Sami Evangelista, Lukasz Fronc, Lom-Messan Hillah, N. Lohmann, Emmanuel Paviot-Adet, Franck Pommereau, C. Rohr, Yann Thierry-Mieg, Harro Wimmel, Karsten Wolf: Raw Report on the Model Checking Contest at Petri Nets 2012. *CoRR* abs/1209.2382 (2012)
- [9] Nicolas Sedlmajer, Didier Buchs, Steve Hostettler, Alban Linard, Edmundo López Bóbeda, Alexis Marechal: A Domain Specific Language Approach for Genetic Regulatory Mechanisms Analysis. *T. Petri Nets and Other Models of Concurrency 6*: 123-145 (2012)
- [10] Kordon, F, Linard, A, Buchs, D, Collange, M, Evangelista, S, Jensen, JF, Lampka, K, Lohmann, N, Paviot-Adet, E, Thierry-Mieg, Y, and Wimmel, H (2012). Report on the Model Checking Contest at Petri Nets 2011, *Transactions on Petri Nets and Other Models of Concurrency*, LNCS 7400, p 169-196.
- [11] Steve Hostettler, Alexis Marechal, Alban Linard, Matteo Risoldi, Didier Buchs (2011) High-Level Petri Net Model Checking with AlPiNA *Fundamenta Informaticae* 113: 3-4, pp 229-264 Feb. 2012
- [12] Nicolas Sedlmajer, Didier Buchs, Steve Hostettler, Alban Linard, Edmundo Lopez, Alexis Marechal (2011), Modelling of Genetic Regulatory Mechanisms with GReg *CoRR* abs/1108.3436:
- [13] M. Risoldi, V. Amaral, B. Barroca, K. Bazargan, D. Buchs, F. Cretton, G. Falquet, A. LeCalvé, S. Malandain and P. Zoss, A language and a methodology for prototyping user interfaces for control systems. In Lalanne D. & Kohlas J. (eds.), *Human Machine Interaction*, LNCS 5440, State-of-the-Art Surveys, Springer-Verlag, Berlin/Heidelberg, 2009, pp. 223-252
- [14] Didier Buchs, Luís Pedro, Levi Lúcio. "Formal Test Generation from UML Models", In "Dependable Systems: Software, Computing, Networks – Research Results of the DICS Program". LNCS 4026, pp.145-171, 2008.
- [15] Levi Lucio and Luis Pedro and Didier Buchs, System Prototype and Verification Using Metamodel-Based Transformations, *DSO*, April 2007 (Vol. 8, No. 4) ISSN: 1541-4922
- [16] David Vernez, Didier R. Buchs, Guillaume E. Pierrehumbert, and Adel Besrou, MORM-A Petri Net Based Model for Assessing OH&S Risks in Industrial Processes: Modeling Qualitative Aspects, *Risk Analysis*, Volume 24 Issue 6 Page 1719-1735 - December 2004
- [17] Stanislav Chachkov and Didier Buchs, Interfacing Software Libraries from Non-deterministic Prototypes, *Design and Automation for Embedded System Journal*, December 2003, Volume 8, Issue 4, pp. pp. 327-343
- [18] Didier Buchs, Sandro Costa, David Hurzeler; Component Based System Modelling for Easier Verification; In P. Ezhilchevan and A. Romanovski, editors, *Concurrency in Dependable Computing*, pp.61–86, Kluwer, 2002.

Didier Buchs, Publications (continued)

- [19] David Vernez, Didier Buchs, Guillaume Pierrehumbert, "Perspectives in the use of coloured Petri nets for risk analysis and accident modelling", *Safety Sciences Journal* 41, 2003, pp 445-463.
- [20] Olivier Biberstein, Didier Buchs, and Nicolas Guelfi; Object-oriented nets with algebraic specifications: The CO-OPN/2 formalism. In G. Agha, F. De Cindio and G. Rozenberg, editors, *Advances in Petri Nets on Concurrent Object-Oriented Programming and Petri Nets*, volume in *Lecture Notes in Computer Science*. Springer-Verlag, LNCS 2001, pp. 70-127.
- [21] Didier Buchs and Nicolas Guelfi, "A Formal Specification Framework for Object-Oriented Distributed Systems," *IEEE Transaction on Software Engineering*, vol. 26, no. 7, July 2000, pp. 635-652.
- [22] Mathieu Buffo and Didier Buchs; Contextual coordination for the mapping of distributed systems on object-oriented systems. *Computer and Artificial Intelligence*, 16(2), 1997.
- [23] Remi Bastide and Didier Buchs, editors, *Models, Formalisms and Methods for Object Oriented Distributed Computing in Workshop Reader*, ECOOP Conference 1997, *Lecture Notes in Computer Science*. Springer Verlag, June 1997.
- [24] Didier Buchs; "Methodes formelles pour le developpement et la verification de logiciels," *Neuvieme journees internationales, Le genie logiciel et ses applications*, *Revue génie logiciel*, November 18-21 1996.
- [25] Didier Buchs, "Les specifications algebriques, un modele formel pour le developpement de logiciels," *Genie logiciel: principes, methodes et techniques*, Alfred Strohmeier and Didier Buchs (Ed.), Presses Polytechniques et Universitaires Romandes, Lausanne, 1996, pp. 137-158.
- [26] Didier Buchs, Pascal Racloz, Mathieu Buffo, Jacques Flumet, Erik Urland; Deriving Parallel programs using SANDS tools, *Transputer Communication Journal*, issue on CASE Technology for Parallel Systems Development, J. Wiley, Vol 3, No 1, pp. 23-32, 1996.
- [27] Buchs Didier, Harms Juergen ,Ligier Yves: "EM2, a MODULA-2 Programming Environnement", *Journal of Pascal, Ada & Modula-2*, Ed J.Wiley, december 1988.
- [28] Buchs Didier, Ligier Yves: "Vers un noyau d'Ateliers de Genie Logiciel (AGL) : le projet EM2", *Revue Génie Logiciel et système expert*, n. 11, "Maitrise des développements logiciels".

Conferences with international program committee

- [29] Dimitri Racordon, Didier Buchs, A Practical Type System for Safe Aliasing, *ACM SIGPLAN International Conference on Software Language Engineering* , Boston, Nov 2018.
- [30] Stefan Klikovits, Alban Linard and Didier Buchs, CREST - A DSL for Reactive Cyber-Physical Systems, 10th SAM2018 - Languages, Methods, and Tools for Systems Engineering, Copenhagen, october 2018.
- [31] Stefan Klikovits, Alban Linard, Dimitri Racordon, Didier Buchs: Petri Sport: A Sport for Petri Netters. PNSE@Petri Nets/ACSD 2018: 35-56
- [32] Didier Buchs, Stefan Klikovits, Alban Linard, Romain Mencattini, Dimitri Racordon: A Model Checker Collection for the Model Checking Contest Using Docker and Machine Learning. Petri Nets 2018: 385-395
- [33] Stefan Klikovits, Alban Linard and Didier Buchs: CREST - A Continuous, REactive SysTems DSL, GEMOC 2017, Austin September 2017.
- [34] Stefan Klikovits, Joachim Denil, Alexandre Muzy and Rick Salay, Modeling Frames, MoDeVVa 2017, 14th Workshop on Model-Driven Engineering, Verification and Validation.:
- [35] Alban Linard and Didier Buchs. Ardoises: Collaborative and Interactive Editing using Layered Data, ACSD 2017, Zaragoza, june 2017.
- [36] Dimitri Racordon, Didier Buchs: Extracting Formal Specifications to Strengthen Type Behaviour Testing. CoRR abs/1708.05194 (2017), EDCC Student forum, Geneva 2017.
- [37] Istvan David, Eugene Syriani, Clark Verbrugge, Didier Buchs, Dominique Blouin, Antonio Cichetti and Ken Vanherpen, Towards Inconsistency Tolerance by Quantification of Semantic Inconsistencies., CommitMDE, Models, Saint Malo, oct. 2016.
- [38] Alban Linard, Benoit Barbot, Didier Buchs, Maximilien Colange, Clement Demoulins, Lom-Messan Hillah, Alexis Martin: Layered Data: A Modular Formal Definition without Formalisms. PNSE @ Petri Nets 2016: 287-306
- [39] Mihai Lica Pura, Luciana Morogan, Didier Buchs, Generation of the path to counter-examples by backward state space traversal in symbolic model checking based on term rewriting, 2016 International Conference on Communications (COMM) ISBN New-2005 DVD 978-1-4673-8196-3.

Didier Buchs, Publications (continued)

- [40] Dimitri Racordon, Didier Buchs: Verifying Multi-core Schedulability with Data Decision Diagrams. SERENE 2016: 45-61
- [41] Lawrence, David P. Y. , Gomes, Claudio , Denil, Joachim , Vangheluwe, Hans and Buchs, Didier, Coupling Petri Nets with Deterministic Formalisms Using Co-simulation, Proceedings of the Symposium on Theory of Modeling and Simulation, TMS-DEVS '16, 2016, Pasadena, California, 6:1–6:8, Society for Computer Simulation International, San Diego, CA, USA
- [42] Stefan Klikovits, David P. Y. Lawrence, Manuel Gonzalez-Berges, Didier Buchs: Automated Test Case Generation for the CTRL Programming Language Using Pex: Lessons Learned. SERENE 2016: 117-132, 2016
- [43] Maximilien Colange, Dimitri Racordon and Didier Buchs. Computing Bounds for Counter Automata, AVOCS 2015.
- [44] Edmundo Lopez Bobeda, Maximilien Colange and Didier Buchs, Building a Symbolic Model Checker from Formal Language Description, ACSD 2015, june 2015, Brussels, Belgium.
- [45] Stefan Klikovits, David P. Y. Lawrence, Manuel Gonzalez-Berges, Didier Buchs: Considering Execution Environment Resilience: A White-Box Approach. SERENE 2015: 46-6
- [46] David P. Y. Lawrence, Didier Buchs, Armin Wellig: Using Instrumentation for Quality Assessment of Resilient Software in Embedded Systems. SERENE 2014: 139-153
- [47] Mihai-Lica Pura, Didier Buchs: Using Symbolic Techniques and Algebraic Petri Nets to Model Check Security Protocols for Ad Hoc Networks. PNSE @ Petri Nets 2014: 91-110
- [48] Mihai Lica Pura and Didier Buchs, A Self-Organized Key Management Scheme for Ad Hoc Networks Based on Identity-Based Cryptography, COMM 2014 International Conference on Communications, 2014.
- [49] Mihai Lica Pura and Didier Buchs, Using algebraic Petri nets for testing ad hoc secure routing protocols in mobility scenarios, SECTEST 2014 Workshop, Cleveland, Ohio.
- [50] Edmundo López Bóbeda, Maximilien Colange and Didier Buchs, StrataGEM: A Generic Petri Net Verification Framework, Application and Theory of Petri Nets and Concurrency, 2014, Springer Verlag.
- [51] Marechal, Alexis and Buchs, Didier, Unifying the Semantics of Modular Extensions of Petri Nets, Application and Theory of Petri Nets and Concurrency, pp= 349–368, 2013, Springer Verlag.
- [52] Nicolas Sedlmajer, Didier Buchs, Steve Hostettler, Alban Linard, Edmundo Lopez, Alexis Marechal (2011) GReg : a Domain Specific Language for the Modeling of Genetic Regulatory Mechanisms In: Proceedings of the 2nd International Workshop on Biological Processes and Petri Nets (BioPPN2011) Edited by: Monika Heiner and Hiroshi Matsuno. 21-35 Sun SITE Central Europe (CEUR)
- [53] Didier Buchs, Steve Hostettler, Alexis Marechal (2011) Experience-based model refinement In: Software Engineering for Resilient Systems - Third International Workshop, SERENE 2011, Geneva, Switzerland, September 29-30, 2011. Edited by: Elena Troubitsyna. Springer-Verlag.
- [54] Didier Buchs and Alban Linard (2011). When Graffiti Brings Order In: International Workshop on Scalable and Usable Model Checking for Petri Nets and other models of concurrency - SUMO 2011 workshop proceedings, pp. 97-111 URL = <http://sumo.lip6.fr/Proceedings.html>.
- [55] Buchs, D, Hostettler, S, Marechal, A, and Risoldi, M (2010). ALPiNA: A symbolic model checker In: Applications and Theory of Petri Nets - 31st International Conference, PETRI NETS 2010, Braga, Portugal, June 21-25, 2010. Proceedings, ed. by Johan Lilius and Wojciech Penczek, vol. 6128, pp. 287-296, Springer Berlin / Heidelberg. Lecture Notes in Computer Science.
- [56] Buchs, D, Hostettler, S, Marechal, A, and Risoldi, M (2010). ALPiNA: An Algebraic Petri Net Analyzer In: Tools and Algorithms for the Construction and Analysis of Systems, 16th International Conference, TACAS 2010, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2010, Paphos, Cyprus, March 20-28, 2010. Proceedings, ed. by Javier Esparza and Rupak Majumdar, vol. 6015, pp. 349-352, Springer.
- [57] Hamez, A, Hostettler, S, Linard, A, Marechal, A, Paviot-Adet, E, and Risoldi, M (2010). Specification of Decision Diagram Operations In: International Workshop on Scalable and Usable Model Checking for Petri Nets and other models of concurrency - SUMO 2010 workshop proceedings, pp. 61-75 URL = <http://sumo.lip6.fr/Proceedings.html>.
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