Mihaela SIGHIREANU

Curriculum Vitæ

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Age:	49	Web:	https://www.irif.fr/~sighirea
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Children:	two (18 and 16 years old)	Phone:	+33 6 8646 1704

1 Appointments Held

Current position since December 2014	*Associate Professor* (french *Maître de conférences HDR*) Computer Science Department Université de Paris member of IRIF, Cnrs UMR 8243
September 1999–November 2014	Assistant Professor Université Paris Diderot
December 1998–August 1999	Post-doctoral position, Inria grant at Inria Rocquencourt
November 1995–November 1998	Ph.D. position, French government grant at Verimag and Inria Rhône-Alpes

2 Education

September 1994	Engineer degree (M.Sc.) in Computer Science from "Politehnica" University of Bucharest
September 1995	M.Sc. degree in Computer Science from University of Grenoble
January 1999	Ph.D. in Computer Science from University of Grenoble
October 2014	Habilitation in Computer Science from Université Paris Diderot

3   Grants

1994–1995   M.Sc. scholarship from the French government

1995–1998   Ph.D. scholarship from the French government

1998–1999   grant from INRIA for post-doctoral studies
project "Fault Tolerance in Synchronous Systems"
at INRIA Rocquencourt

2002–2005   grant from the French Research Agency
Program "Young Researcher" (in french ACI Jeunes Chercheurs)
Project title: "Qualitative and quantitative program verification"

4   Research Interests

General interest on the theoretical issues and practical applications of formal methods (logic, automata, Petri nets, process algebra, rewriting) for the design of software.

Particular focus on algorithmic verification techniques like abstract interpretation, automated solvers, model-checking, static analysis, symbolic execution, test generation.

Recent research on automated solvers for program logics: first order logic on arrays, separation logic, feature tree logics.

5   Publications

5.1   Journals

[1]   Bin Fang, **Mihaela Sighireanu**, Geguang Pu, Wen Su, Jean-Raymond Abrial, Mengfei Yang, and Lei Qiao. "Formal modelling of list based dynamic memory allocators". In: *SCIENCE CHINA Information Sciences* 61.12 (2018), 122103:1–122103:16. DOI: 10.1007/s11432-017-9280-9.

[2]   Constantin Enea, Ondrej Lengál, **Mihaela Sighireanu**, and Tomás Vojnar. "Compositional entailment checking for a fragment of separation logic". In: *Formal Methods in System Design* 51.3 (2017), pp. 575–607. DOI: 10.1007/s10703-017-0289-4.

[3]   **Mihaela Sighireanu** and David R. Cok. "Report on SL-COMP 2014". In: *JSAT* 9 (2014), pp. 173–186. URL: https://satassociation.org/jsat/index.php/jsat/article/view/128.

[4]   Ahmed Bouajjani, Cezara Dragoi, Constantin Enea, Yan Jurski, and **Mihaela Sighireanu**. "A Generic Framework for Reasoning about Dynamic Networks of Infinite-State Processes". In: *Logical Methods in Computer Science* 5.2 (2009). URL: http://arxiv.org/abs/0903.3126.

[5]   **Mihaela Sighireanu** and Tayssir Touili. "Bounded Communication Reachability Analysis of Process Rewrite Systems with Ordered Parallelism". In: *Electr. Notes Theor. Comput. Sci.* 239 (2009), pp. 43–56. DOI: 10.1016/j.entcs.2009.05.029.

[6]   Radu Mateescu and **Mihaela Sighireanu**. "Efficient on-the-fly model-checking for regular alternation-free mu-calculus". In: *Sci. Comput. Program.* 46.3 (2003), pp. 255–281. URL: http://dx.doi.org/10.1016/S0167-6423(02)00094-1.

[7]   **Mihaela Sighireanu** and Radu Mateescu. "Verification of the Link Layer Protocol of the IEEE-1394 Serial Bus (FireWire): An Experiment with E-LOTOS". In: *STTT* 2.1 (1998), pp. 68–88. URL: http://dx.doi.org/10.1007/s100090050018.

5.2   International conferences

[8]   Benedikt Becker, Nicolas Jeannerod, Claude Marché, Yann Régis-Gianas, **Mihaela Sighireanu**, and Ralf Treinen. "Analysing installation scenarios of Debian packages". In: *TACAS*. Lecture Notes in Computer Science. Springer, 2020.

[9]   Ezio Bartocci et al. "TOOLympics 2019: An Overview of Competitions in Formal Methods". In: *TACAS, Tools and Algorithms for the Construction and Analysis of Systems*. Vol. 11429. Lecture Notes in Computer Science. Springer, 2019, pp. 3–24. DOI: 10.1007/978-3-030-17502-3_1.

[10] **Mihaela Sighireanu** et al. "SL-COMP: Competition of Solvers for Separation Logic". In: *TACAS, Tools and Algorithms for the Construction and Analysis of Systems*. Vol. 11429. Lecture Notes in Computer Science. Springer, 2019, pp. 116–132. DOI: 10.1007/978-3-030-17502-3_8.

[11] Quentin Bouillaguet, François Bobot, **Mihaela Sighireanu**, and Boris Yakobowski. "Exploiting Pointer Analysis in Memory Models for Deductive Verification". In: *UMCAI, Verification, Model Checking, and Abstract Interpretation*. Vol. 11388. Lecture Notes in Computer Science. Springer, 2019, pp. 160–182. DOI: 10.1007/978-3-030-11245-5_8.

[12] Raphaël Cauderlier and **Mihaela Sighireanu**. "A Verified Implementation of the Bounded List Container". In: *TACAS, Tools and Algorithms for the Construction and Analysis of Systems*. Vol. 10805. Lecture Notes in Computer Science. Springer, 2018, pp. 172–189. DOI: 10.1007/978-3-319-89960-2_10.

[13] Constantin Enea, Ondej Lengál, **Mihaela Sighireanu**, and Tomáš Vojnar. "SPEN: A Solver for Separation Logic". In: *NFM, NASA Formal Methods*. Vol. 10227. Lecture Notes in Computer Science. Springer, 2017, pp. 302–309. DOI: 10.1007/978-3-319-57288-8_22.

[14] Bin Fang and **Mihaela Sighireanu**. "A Refinement Hierarchy for Free List Memory Allocators". In: *ISMM, International Symposium in Memory Management*. Acceptance rate: 40%. ACM SIGPLAN, 2017, pp. 104–114. DOI: 10.1145/3092255.3092275.

[15] Bin Fang and **Mihaela Sighireanu**. "Hierarchical Shape Abstraction for Analysis of Free-List Memory Allocators". In: *LOPSTR*. Vol. 10184. Lecture Notes in Computer Science. Springer, 2016, pp. 151–167. DOI: 10.1007/978-3-319-63139-4_9.

[16] Constantin Enea, **Mihaela Sighireanu**, and Zhilin Wu. "On Automated Lemma Generation for Separation Logic with Inductive Definitions". In: *ATVA*. Vol. 9364. Lecture Notes in Computer Science. Springer, 2015, pp. 80–96. DOI: 10.1007/978-3-319-24953-7_7.

[17] Constantin Enea, Ondej Lengál, **Mihaela Sighireanu**, and Tomáš Vojnar. "Compositional Entailment Checking for a Fragment of Separation Logic". In: *APLAS*. Vol. 8858. Lecture Notes in Computer Science. Springer, 2014, pp. 314–333. DOI: 10.1007/978-3-319-12736-1_17.

[18] Constantin Enea, Vlad Saveluc, and **Mihaela Sighireanu**. "Compositional Invariant Checking for Overlaid and Nested Linked Lists". In: *ESOP*. Vol. 7792. Lecture Notes in Computer Science. Springer, 2013, pp. 129–148. DOI: 10.1007/978-3-642-37036-6_9.

[19] Cezara Dragoi, Constantin Enea, and **Mihaela Sighireanu**. "Local Shape Analysis for Overlaid Data Structures". In: *SAS*. Vol. 7935. Lecture Notes in Computer Science. 2013, pp. 150–171. DOI: 10.1007/978-3-642-38856-9_10.

[20] Ahmed Bouajjani, Cezara Dragoi, Constantin Enea, and **Mihaela Sighireanu**. "Accurate Invariant Checking for Programs Manipulating Lists and Arrays with Infinite Data". In: *ATVA*. Vol. 7561. Lecture Notes in Computer Science. Springer, 2012, pp. 167–182. DOI: 10.1007/978-3-642-33386-6_14.

[21] Ahmed Bouajjani, Cezara Dragoi, Constantin Enea, and **Mihaela Sighireanu**. "Abstract Domains for Automated Reasoning about List-Manipulating Programs with Infinite Data". In: *UMCAI*. Vol. 7148. Lecture Notes in Computer Science. Springer, 2012, pp. 1–22. DOI: 10.1007/978-3-642-27940-9_1.

[22] Ahmed Bouajjani, Cezara Dragoi, Constantin Enea, and **Mihaela Sighireanu**. "On interprocedural analysis of programs with lists and data". In: *PLDI*. ACM, 2011, pp. 578–589. DOI: 10.1145/1993498.1993566.

[23] Julien Clément, Carole Delporte-Gallet, Hugues Fauconnier, and **Mihaela Sighireanu**. "Guidelines for the Verification of Population Protocols". In: *ICDCS*. IEEE Computer Society, 2011, pp. 215–224. DOI: 10.1109/ICDCS.2011.36.

[24] Ahmed Bouajjani, Cezara Dragoi, Constantin Enea, Ahmed Rezine, and **Mihaela Sighireanu**. "Invariant Synthesis for Programs Manipulating Lists with Unbounded Data". In: *CAV*. Vol. 6174. Lecture Notes in Computer Science. Springer, 2010, pp. 72–88. DOI: 10.1007/978-3-642-14295-6_8.

[25] Yasmina Abdeddaïm, Eugene Asarin, and **Mihaela Sighireanu**. "Simple Algorithm for Simple Timed Games". In: *TIME*. IEEE Computer Society, 2009, pp. 99–106. DOI: 10.1109/TIME.2009.14.

[26] Ahmed Bouajjani, Cezara Dragoi, Constantin Enea, and **Mihaela Sighireanu**. "A Logic-Based Framework for Reasoning about Composite Data Structures". In: *CONCUR*. Vol. 5710. Lecture Notes in Computer Science. Springer, 2009, pp. 178–195. DOI: 10.1007/978-3-642-04081-8_13.

[27] Ahmed Bouajjani, Cezara Dragoi, Yan Jurski, and **Mihaela Sighireanu**. "Rewriting Systems over Nested Data Words". In: *MEMICS*. Vol. 13. OASICS. Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik, Germany, 2009. URL: http://drops.dagstuhl.de/opus/volltexte/2009/2356.

[28] Yasmina Abdeddaïm, Eugene Asarin, Matthieu Gallien, Félix Ingrand, Charles Lesire, and **Mihaela Sighireanu**. "Planning Robust Temporal Plans: A Comparison Between CBTP and TGA Approaches". In: *ICAPS*. AAAI, 2007, pp. 2–9. URL: http://www.aaai.org/Library/ICAPS/2007/icaps07-001.php.

[29] Ahmed Bouajjani, Yan Jurski, and **Mihaela Sighireanu**. "A Generic Framework for Reasoning About Dynamic Networks of Infinite-State Processes". In: *TACAS*. Vol. 4424. Lecture Notes in Computer Science. Springer, 2007, pp. 690–705. DOI: 10.1007/978-3-540-71209-1_54.

[30] Ahmed Bouajjani, Peter Habermehl, Yan Jurski, and **Mihaela Sighireanu**. "Rewriting Systems with Data". In: *FCT*. Vol. 4639. Lecture Notes in Computer Science. Springer, 2007, pp. 1–22. DOI: 10.1007/978-3-540-74240-1_1.

[31] Gaël Patin, **Mihaela Sighireanu**, and Tayssir Touili. "Spade: Verification of Multithreaded Dynamic and Recursive Programs". In: *CAV*. Vol. 4590. Lecture Notes in Computer Science. Springer, 2007, pp. 254–257. DOI: 10.1007/978-3-540-73368-3_28.

[32] Marc Boyer and **Mihaela Sighireanu**. "Synthesis and Verification of Constraints in the PGM Protocol". In: *FME*. Vol. 2805. Lecture Notes in Computer Science. Springer, 2003, pp. 264–281. DOI: 10.1007/978-3-540-45236-2_16.

[33] Alain Girault, Hamoudi Kalla, **Mihaela Sighireanu**, and Yves Sorel. "An Algorithm for Automatically Obtaining Distributed and Fault-Tolerant Static Schedules". In: *DSN*. IEEE Computer Society, 2003, pp. 159–168. URL: http://doi.ieeecomputersociety.org/10.1109/DSN.2003.1209927.

[34] Aurore Annichini, Ahmed Bouajjani, and **Mihaela Sighireanu**. "TReX: A Tool for Reachability Analysis of Complex Systems". In: *CAV*. Vol. 2102. Lecture Notes in Computer Science. Springer, 2001, pp. 368–372. URL: http://dx.doi.org/10.1007/3-540-44585-4_34.

[35] Ahmed Bouajjani, Aurore Collomb-Annichini, Yassine Lakhnech, and **Mihaela Sighireanu**. "Analyzing Fair Parametric Extended Automata". In: *SAS*. Vol. 2126. Lecture Notes in Computer Science. Springer, 2001, pp. 335–355. URL: http://dx.doi.org/10.1007/3-540-47764-0_19.

[36] Alain Girault, Christophe Lavarenne, **Mihaela Sighireanu**, and Yves Sorel. "Generation of Fault-Tolerant Static Scheduling for Real-Time Distributed Embedded Systems with Multi-Point Links". In: *IPDPS*. IEEE Computer Society, 2001, p. 125.

[37] Alain Girault, Christophe Lavarenne, Yves Sorel, and **Mihaela Sighireanu**. "Fault-Tolerant Static Scheduling for Real-Time Distributed Embedded Systems". In: *ICDCS*. IEEE Computer Society, 2001, pp. 695–698. URL: http://doi.ieeecomputersociety.org/10.1109/ICDSC.2001.919002.

[38] Hubert Garavel and **Mihaela Sighireanu**. "A Graphical Parallel Composition Operator for Process Algebras". In: *FORTE*. Vol. 156. IFIP Conference Proceedings. Kluwer, 1999, pp. 185–202.

[39] Jean-Claude Fernandez, Hubert Garavel, Alain Kerbrat, Laurent Mounier, Radu Mateescu, and **Mihaela Sighireanu**. "CADP - A Protocol Validation and Verification Toolbox". In: *CAV*. Vol. 1102. Lecture Notes in Computer Science. Springer, 1996, pp. 437–440. URL: http://dx.doi.org/10.1007/3-540-61474-5_97.

[40] Hubert Garavel and **Mihaela Sighireanu**. "On the Introduction of Exceptions in E-LOTOS". In: *FORTE*. Vol. 69. IFIP Conference Proceedings. Chapman & Hall, 1996, pp. 469–484.

5.3 Book chapters

[41] Ken J. Turner and **Mihaela Sighireanu**. "(E)-LOTOS". In: *Software Specification Methods – An Overview Using a Case Study*. Ed. by Henri Habrias and Marc Frappier. ISTE Hermes and Lavoisier, Apr. 2006, pp. 233–258.

[42] Guy Leduc, Alan Jeffrey, and **Mihaela Sighireanu**. "Introduction à E-LOTOS". In: *Ingénierie des protocoles et qualité de service*. Ed. by Ana Cavalli. IC2. Hermes, 2001, pp. 213–253.

[43] Ken J. Turner and **Mihaela Sighireanu**. "ELOTOS: (Enhanced) Language Of Temporal Ordering Specification". In: *Software Specification Methods*. Ed. by Marc Frappier and Henri Habrias. Springer, 2001, pp. 165–190. DOI: 10.1007/978-1-4471-0701-9.

5.4 Thesis

[44] **Mihaela Sighireanu**. "Algorithmic Software Verification and Analysis". Habilitation à diriger des recherches. Université Paris Diderot, 2014.

[45] **Mihaela Sighireanu**. "Contribution à la définition et à l'implémentation de la norme "Extended LOTOS"". PhD thesis. Université Joseph Fourier, Grenoble, France, 1999.

[46] **Mihaela Sighireanu**. "Compilation efficace des types abstraits de données LOTOS". MA thesis. Université Joseph Fourier, Grenoble, France, 1995.

5.5 Miscellaneous publications

[47] Nicolas Jeannerod, Yann Régis-Gianas, Claude Marché, **Mihaela Sighireanu**, and Ralf Treinen. *Specification of UNIX Utilities*. Technical Report. HAL Archives Ouvertes, Oct. 2019. URL: https://hal.inria.fr/hal-02321691.

[48] David Pichardie and **Mihaela Sighireanu**. "AVOCS 2018: Preface". In: *ECEASST* 76 (2018). DOI: 10.14279/tuj.eceasst.76.1071.

[49] Radu Iosif, Cristina Serban, Andrew Reynolds, and Mihaela Sighireanu. *Encoding Separation Logic in SMT-LIB v2.5*. 2018. URL: https://github.com/sl-comp/SL-COMP18/input/Docs.

[50] Alain Griffault, Frederique Herbreteau, Gerard Point, Grigoire Sutre, Ameryc Vincent, **Mihaela Sighireanu**, Sebastien Bardin, Alain Finkel, and David Nowak. *Intégration des outils PERSÉE*. Deliverable RC1 of Project PERSÉE of ACI Sécurité Informatique. 32 pages. LSV, Apr. 2005.

5.6 Workshops

[51] **Mihaela Sighireanu**. "Model-Checking Validation of the LOTOS Descriptions of the Invoicing Case Study". In: *International Workshop on Comparing System Specification Techniques*. Ed. by Henri Habrias. Mar. 1998, pp. 99–114.

[52] Aurore Collomb-Annichini and **Mihaela Sighireanu**. "Parameterized Reachability Analysis of the IEEE 1394 Root Contention Protocol using TReX". In: *International Workshop RT-TOOLS*. Aalborg University, 2001.

[53] Alain Girault, Christophe Lavarenne, **Mihaela Sighireanu**, and Yves Sorel. "Generation of Fault-Tolerant Static Scheduling for Real-Time Distributed Embedded Systems with Multi-Point Links". In: *IEEE Workshop on Fault-Tolerant Parallel and Distributed Systems, FTPDS'01, San Francisco (USA)*. IEEE. 2001.

[54] Radu Mateescu and **Mihaela Sighireanu**. "Validation of the Link Layer Protocol of the IEEE-1394 Serial Bus ("FireWire"): an Experiment with E-LOTOS". In: *International Workshop FMICS*. Apr. 2000.

[55]   Hubert Garavel and **Mihaela Sighireanu**. "Towards a Second Generation of Formal Description Techniques — Rationale for the Design of E-LOTOS". In: *International Workshop FMICS*. Ed. by J.-F. Groote, B. Luttik, and Jos van Wamel. May 1998, pp. 187–230.

[56]   Hubert Garavel, Marc Jorgensen, Radu Mateescu, Charles Pecheur, **Mihaela Sighireanu**, and Bruno Vivien. "CADP'97 — Status, Applications and Perspectives". In: *COST 247 International Workshop on Applied Formal Methods in System Design*. Ed. by Ignac Lovrek. IEEE, June 1997.

[57]   **Mihaela Sighireanu** and Radu Mateescu. "Validation of the Link Layer Protocol of the IEEE-1394 Serial Bus ("FireWire"): an Experiment with E-LOTOS". In: *COST 247 International Workshop on Applied Formal Methods in System Design*. Ed. by Ignac Lovrek. IEEE, June 1997, pp. 57–72.

6   Programming

6.1   Developed Software

Cadp (www.inrialpes.fr/vasy/cadp)
:   toolbox for finite state model-checking; participation at 5% in 1998; coding in C

Traian (www.inrialpes.fr/vasy/traian)
:   compilation of Lotos-NT modeling language; participation at 80% in 1999; coding in C and Syntax (INRIA); the current version has been obtained in 2020 by boostrapp of the first version by Convecs team of INRIA

Trex (www.irif.univ-paris-diderot.fr/trex)
:   symbolic verification of extended automata (with counters, clocks, and FIFO queues); participation at 60% in 2006; developed with Aurore Collomb-Annichini and Ahmed Bouajjani; coding in C and C++

Press (www.irif.univ-paris-diderot.fr/~sighirea/press)
:   reachability analysis of concurrent programs with recursive procedures using tree automata; participation at 80% in 2006; developed with Tayssir Touili; coding in Ocaml

Spade (www.irif.univ-paris-diderot.fr/spade)
:   reachability analysis of concurrent programs with rendez-vous communication and recursive procedures suing tree automata; participation at 40% in 2007; developed with Gaël Patin and Tayssir Touili; coding in Ocaml

CMRS (www.irif.univ-paris-diderot.fr/~sighirea/cmrs)
:   invariant checker (including decision procedure) for rewriting systems over multi-sets with infinite data; participation at 80% in 2008; developed with Selma Saïdi and Ahmed Bouajjani; coding in Ocaml

Celia (www.irif.univ-paris-diderot.fr/celia)
:   toolbox of static analysis and verification of C programs with dynamic lists, includes libraries of abstract domains and independent decision procedures; participation at 80% in 2015, developed with Cezara Drgoi, Constantin Enea, Vlad Saveluc, and Ahmed Bouajjani; coding in C and Ocaml

Spen (www.irif.univ-paris-diderot.fr/spen, https://github.com/mihasighi/spen.git)
:   solver for checking entailments in a fragment of Separation Logic with recursive definitions for complex lists; participation at 50% in 2015; developed with Ondraj Lengal (Univ. of Brno) and Constantin Enea; coding in C

SL-COMP (sl-comp.github.io/)
 tools for analyzing, typechecking and solving satisfiability problems for the fragments of separation logic allowed in the SL-COMP competition; tools for mining the results obtained from StarExec (starexec.org) platform; participation at 75% in 2019; coding in C, C++, bash

6.2 Skills

C/C++: more than 40 KLOC of code in software projects, main ones on compilation (including lex/yacc) TRAIAN (5 KLOC of C), algorithms for constraint solving TREX (10 KLOC of C and C++), static analysis domains CELIA (10 KLOC of C), constraint solving by decision procedures SPEN (5 KLOC of C).

Java: small projects for teaching object oriented programming.

LaTeX: all my publications and teaching notes are written in LaTeX.

OCaml: more than 20 KLOC of code in software projects, main ones on compilation with ocamllex/ocamlyacc and menhir, on algorithms on graphs and automata CMRS & SPADE & PRESS (15 KLOC), on static analysis CELIA (5 KLOC).

Scripting: Awk, Bash and Python for reading, transforming and presenting data for teaching the course on word and treei algorithms.

SCADE: project on model-based design of an autonomous driver SyncContest 2017.

Editors and developing environments: Eclipse, Emacs, GDB, Make, Netbeans, vi.

Version management: SCCS, CVS, Subversion, Git.

Operating systems: Linux at the level of shell, administration and programming in C.

7 Participation to Research Projects

2001–2004: Member of the European project ADVANCE (coordinator A. Bouajjani, IRIF) on "Advanced techniques for infinite state systems" over 5 European countries. Personal contributions: 4 publications [34, 35, 52, 32], 1 developed tool TREX;

2002–2005: Coordinator of the project ACI Young Researcher on "Qualitative and quantitative verification of programs" (team of 3 researchers and 2 students); Personal contributions: 2 publications [32, 5], 1 developed tool PRESS.

2006–2008: Member of the French ACI project PERSEE (coordinator Ph. Schnoebelen, LSV) of French institutes LSV (ENS Cachan), LABRI (Bordeaux) and LIAFA. Personal contributions: 2 publications [50, 5, 31], 1 developed tool SPADE.

2006–2008: Local coordinator for LIAFA in the French ANR project AMAES (coordinator S. Bensalem, Verimag) on "Verification techniques for robot planning"; participants: VERIMAG (Grenoble), LIAFA and LAAS (Toulouse); personal contributions: 2 publications [28, 25].

2007–2009: Member of the french ANR project AVERISS (coordinator A. Bouajjani, IRIF) on "Verification of infinite state systems"; participants: LIAFA, LABRI (Bordeaux) et LSV (ENS Cachan); personal contributions: 5 publications [29, 30, 27, 4, 26], 1 developed tool CMRS.

2009–2012: Member of the french ANR project Veridyc (coordinator R. Iosif, Verimag) on "Verification of dynamic and concurrent software"; participants: LIAFA, LSV (ENS Cachan), VERIMAG (Grenoble), CEA LIST and EDF. personal contributions: 6 publications [24, 22, 21, 20, 18, 19], 2 tool developed CELIA and SPEN.

2014–2018: Local coordinator for IRIF in the french ANR project Vecolib (coordinator R. Iosif, Verimag) on "Verification of libraries of containers"; participants: LIAFA, VERIMAG (Grenoble), CEA LIST and AdaCore. personal contributions: 9 publications [3, 17, 16, 15, 13, 2, 14, 12, 1],
1 developed solver for separation logic (SPEN) and extension of plugin CELIA.

2015–2020: Member of the french ANR project Colis (coordinator R. Treinen, IRIF) on "Verification of installation scripts of Debian"; personal contributions: 2 publications [8, 47].

2018-2020: Member of the project CAS-INRIA VIP (coordinator Pierre Louis Curien, IRIF) with Institute of Software of Chinese Academy of Science (Pekin); collaboration with Zhilin Wu.

8   Graduate Student Advisor

The complete list is available at https://www.irif.fr/~sighirea/internship.html.

Master 2:
- Bruno Vivien[†] (M.Sc. Internship CNAM 1998):
  Compilation of E-LOTOS data types
- Selma Saïdi (M.Sc. Internship Univ. H. Boumedien, Algeria, 2007):
  Verification of parameterized systems with infinite data
- Vlad Saveluc[†] (M.Sc. Internship MPRI 2012):
  Abstract domains for the analysis of programs with dynamic data structures
- Nicolas Jeannerod[†] (M.Sc. Internship MPRI 2016):
  Definition of the the Colis scripting language

PhD Thesis:

1. Cezara Drgoi[†] (Univ. Paris Diderot, **Ph.D.**, Nov. 2007– Dec. 2011):
   Automatic verification of programs with dynamic memory and infinite data

2. Bin Fang[†] (ECNU Shanghai China and Univ. Paris, **Ph.D.**, 2014–2018):
   Algorithmic verification of memory allocators

3. Quentin Bouillaguet[†] (Univ. Paris and CEA, **Ph.D.**, Feb. 2017–Aug. 2020):
   Combining deductive verification and abstract interpretation

[†] Co-advisor

Post-doctoral:

1. Marc Boyer (2003), in the project EU ADVANCE, now researcher at ONERA.

2. Petr Matousek (2005), in the project ACI Jeune Chercheur; now assistant professor at Brno University in Czech Republic.

3. Raphaël Cauderlier (2017—2018), in the project ANR Vecolib; now at Tezos Fundation.

9 Scientific Expertise

9.1 Conference Committee

Co-chair:

- SAS 2020, international conference, with David Pichardie (PU ENS Rennes), `http://staticanalysis.org/sas2020/`;
- ADSL 2018 and 2020, international workshop, with Radu Iosif (CR Verimag) et Nikos Gorogiannis (Middlesex University); 30 participants, hosted by LICS'18 resp. POPL'20, `http://adsl.univ-grenoble-alpes.fr/`
- AVOCS 2018, international workshop, with David Pichardie (PU ENS Rennes), 50 participants, hosted by FM'18, proceedings publication [48], `http://avocs18.irisa.fr/`

Organization committees:

- Frama-C and SPARK Day 2017 (Paris), with Claude Marché (INRIA), Florent Kirshner (CEA), Yannick Moy (AdaCore), 120 participants, `frama-c.com/FCSD17.html`
- CONCUR'10 (Paris), international conference, with 6 peoples, 200 participants, `http://concur2010.saclay.inria.fr/`
- FMICS'01 (Paris), international workshop, 38 participants, `https://www.ercim.eu/publication/Ercim_News/enw47/6FMICS.html`

Program committee: FMICS'02, RT-TOOLS'02, JITC'07, ICSEA'07, TAPAS'15, JFLA'17, VSTTE'17, JFLA'19, ADSL'18, TOOLympics'19, ADSL'20, VMCAI'20, SAS'20, PAAR'20.

Competition chair and organization:

- SL-COMP 2014 (May-June 2014): first competition of solvers for separation logic; participants: 6 solvers developed at Microsoft Research, Univ. College of London, NUS Singapore, VERIMAG, Czech Republic, Univ. Paris Diderot. `www.irif.fr/~sighirea/sl-comp/14`
  Co-chair with David R. Cok from GrammaTech Inc.
- SyncContest 2017 (September 2016-February 2017): inter-university competition on SCADE programming; participants: 5 teams from U. Paris Diderot and TU Hamburg.
  `https://sites.google.com/site/synccontest2017/home`
  Co-chair with Eugene Asarin (Prof. at U. Paris Diderot).
- SL-COMP 2018 (May-June 2018): second edition of SL-COMP; participants: 11 solvers developed at Microsoft Research, Univ. College of London, Middlesex University London, NUS Singapore, VERIMAG, Czech Republic, Univ. Paris Diderot, Chinese Academy of Sciences, Teesside University UK, University of Iowa USA, TU Wien

Austria.
- SL-COMP 2019 (February-April 2019): third edition of SL-COMP; participants: same as the 2nd edition. https://sl-comp.github.io/
  Event of TOOLympics 2019 at ETAPS 2019.

9.2 Reviewing

Theses committee
- International, jury member:
    1. Ahmed Rezine, Ph.D., Uppsala University, 2008
    2. Frederic Haziza, Ph.D., Uppsala University, 2015
    3. Peter Backeman, Ph.D., Uppsala University, 2019
- National, examiner:
    1. Mathias Peron, Ph.D., Université de Grenoble, 2010
    2. Damien Thivolle, Ph.D., "Politehnica" University of Bucharest, 2011
    3. Khanh Huu The Dam, Ph.D., Université Paris Diderot, 2018
    4. Guillaume Claret, Ph.D., Université Paris Diderot, 2018
    5. Hai Nguyen Van, Ph.D., Université Paris Saclay, 2018
    6. Mário Pereira, Ph.D., Université Paris Saclay, 2018
    7. Xin YE, Ph.D., Université Paris 13, 2019
    8. Lionel Blatter, Ph.D., Université Paris Saclay, 2019
    9. Steven Varoumas, Ph.D., Sorbonne Université, 2019
    10. Armaël Guéneau, Ph.D., Université de Paris, 2019
    11. Yanis Sellami, Ph.D., Université de Grenoble, 2020
    12. Benjamin Farinier, Ph.D., Université de Grenoble, 2020
- National, reviewer:
    1. David Bühler, Ph.D., Université de Rennes 1, 2017
    2. Thomas Geffroy, Ph.D., Université de Bordeaux, 2017
    3. Julien Signoles, HDR, Université Paris Saclay, 2018

Journals reviewing
- Computer Journal (CompJ): 2003
- Computer Networks Journal (COMPUT NETW): 2005
- International Journal of Foundations of Computer Science (IJFCS): 2003
- Information Processing Letters (IPL): 2007
- Journal of Information Technologies and Control (JITC): 2007
- Journal of Systems and Software (JSS): 2007
- Theoretical Computer Science Journal (TCS): 2002
- Transactions on Software Engineering (TSE): 2010, 2011
- International Journal on Software Tools for Technology Transfer (STTT): 2015
- Formal Aspects of Computing (FAOC): 2016
- Formal Methods for System Design (FMSD): 2019

Conferences reviewing
- International Conference on Automated Technology for Verification and Analysis (ATVA): 2010, 2011
- International Conference on Computer Aided Verification (CAV): 2006-2013
- International Conference on Concurrency Theory (CONCUR): 2006, 2010-2011
- Formal Modeling and Analysis of Timed Systems (FORMATS): 2006-2007
- World Congress on Formal Methods (FM): 2012
- Foundations of Software Science and Computation Structures (FOSSACS): 2003, 2006-2007, 2010, 2018
- International Colloquium on Automata, Languages and Programming (ICALP): 2009, 2011
- International Conference on Distributed Computing Systems (ICDCS): 2004
- International Conference on Software Engineering Advances (ICSEA): 2007-2008
- International Colloquium on Theoretical Aspects of Computing (ICTAC): 2006
- Journées Francophones des Langages Applicatifs (JFLA): 2009, 2018-2019
- Logic in Computer Science (LICS): 2012, 2016, 2018, 2019
- Annual Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS): 2005, 2008
- Symposium on Principles of Distributed Computing (PODC): 2010
- Symposium on Principles of Programming Languages (POPL): 2009, 2014, 2017
- International Static Analysis Symposium (SAS): 2012, 2014, 2020
- Symposium on Theoretical Aspects of Computer Science (STACS): 2002
- International Workshop on Reachability Problems (RP): 2009
- International Workshop on Real-Time Tools (RT-TOOLS): 2002
- International Conference on Software Engineering and Formal Methods (SEFM): 2003
- International Conference on Tools and Algorithms for Construction and Analysis of Systems (TACAS): 2002-2003, 2008-2010, 2017-2019
- International Workshop on Verification and Evaluation of Computer and Communication Systems (VECOS): 2008
- International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI): 2006-2007, 2011, 2020
- Verified Software: Theories, Tools and Experiments: 2017-18

Miscelaneous reviewing
- The Netherlands Organization for Scientific Research (NWO): 2005
- French National Research Agency (ANR): 2011
- Selection Committee of the Computer Science Department (french "comité de sélection"): 2003, 2005, 2006, 2009, 2010, 2013, 2015, 2018, 2019
- Doctoral schools: ENS Cachan (2019), University Paris 13 (2019)

9.3   Talks & Seminars (last 10 years)

Meetings and seminars:

June 1999	TOLERE meeting, INRIA Rocquencourt, France
November 1999	Verification seminar at LIAFA
November 2001	LSV seminar, ENS Cachan, Paris
November 2003	PERSEE meeting, Paris, France

September 2006 AMAES meeting, Grenoble, France
December 2006 Verification seminar at LIAFA
January 2007 AMAES meeting, Toulouse, France
November 2007 STIC'07, Paris, France
February 2008 AMAES meeting, Toulouse, France
November 2008 SSIA meeting, Paris, France
February 2010 VERIDYC meeting, Grenoble, France
May 2010 LCFS seminar, University of Edinburgh, UK
January 2011 VERIDYC meeting, Grenoble, France
June 2012 IRILL Workshop, Paris, France
November 2013 ECNU Group, Shanghai University, China
Mai 2014 Didactic seminar of LIAFA & PPS, Paris
November 2014 VECOLIB meeting, Paris, France
May 2015 Frama-C Day, CEA Saclay, France
August 2015 VTSA summer school, University of Koblenz-Landau, Germany
November 2015 VECOLIB meeting, Grenoble, France
September 2017 Dagstuhl seminar 17371 on Tools for second-order logics, Germany
November 2017 Seminar of IRIF group "Automata and Verification" Paris, France
November 2017 Invited Talk "Véhicules autonomes et méthodes formelles" Toulouse, France
May 2018 Invited talk CNRS Working group (GDT) on Verification, Grenoble, France
September 2018 ISCAS seminar, Beijing, China
November 2018 Workshop of VIP project, Paris, France
November 2018 Seminar of IRIF group "Proofs, Programming and Systems"
February 2019 Lorentz Center Seminar, Netherlands
December 2019 Seminar at Uppsala University, Sweden

Conferences:

June 1997 COST 247 meeting, Zagreb, Croatia
March 1998 CSST'98 workshop, Nantes, France
June 2001 CAV'01, Paris, France
July 2001 RT-TOOLS'01, Aalborg, Denmark
September 2003 FM'03, Pisa, Italy
June 2005 SENVA (CWI & INRIA) Workshop, Invited talk
September 2006 INFINITY'06, Bonn, Germany
July 2009 TIME'09, Bressanone-Brixen, Italy
May 2011 ALGOTEL'11, Cap Esterel, France
July 2011 ICDCS'11, Minneapolis, USA
July 2014 Invited talk on SL-COMP'14 at SMT-COMP'14, FLOC, Vienna
September 2016 LOPSTR'16, Edinburgh, UK
May 2017 NFM'17, Nasa Ames, USA
July 2018 Invited talk on SL-COMP'18 at ADSL Workshop of FLOC, Oxford, UK
April 2019 TOOLympics TACAS'19, Prague, Czech Republic

10   Teaching

At the C.S. Dept. of U. Paris Diderot, teaching is organized in main lecture (C), directed works (TD), or practical works (TP). The level of the lecture is given by the Bologna system, i.e., Licence 1-3 and Master 1-2. More information is available at https://www.irif.fr/~sighirea/teaching.html

Programming:
  - imperative: C (L1: TP, L3: C/TP/PR), Java (L1: CTD/TP), Python (L2: TP),
  - object oriented: Ada (M2: TP), Java (L3: TP, M1: C/PR, M2: TP),
  - functional: Ocaml (L3: TP), Scheme (L2: TP),
  - synchronous: Esterel, Lustre, SCADE (M2: C/TP/PR),
  - concurrency and networking: in C (L3: C/TP), Java (M1: C/TP),
  - compilation: with lex/yacc and ocamllex/ocamlyacc (L3: TP)

Algorithmic and complexity:
  - data structures (L2: TD),
  - on arrays and trees (L2,L3: TP),
  - on graphs (M1: TD),
  - applications: PageRank (M1: PR, M2: TP).

Hardware, operating systems and networks:
  - combinatorial and sequential circuits (M1: C/TD/TP),
  - microprocessor architecture (M1: C/TD/TP),
  - operating systems: principles and programming in UNIX (L1: CTP, L3: C),
  - TCP/IP networks: principles and programming (M1: C/TD/TP/PR).

Software engineering:
  - developing environments: Eclipse, Emacs, Git (L3: CTP),
  - developing methods: V method, agile method (M1: C/TD/PR),
  - modeling with UML (M1: C/TD),
  - formal modeling (M2: C/TD) with process algebra (CCS, Lotos), temporal logic, temporal automata (tools Uppaal and Prism), B method (tool Atelier B), Petri nets (tool Tina), labeled transition systems (tool CADP), abstract data types,
  - test methods: principles and practice with CUnit/JUnit (M2: C/TD)
  - formal verification (M2: C/TP): model-checking (CADP, Spin), static analysis (tool Frama-C), symbolic execution, deductive verification (tools Frama-C, Why).

11   Service to university

Elected positions:
  - 2000–2004, 2008–2012: Elected member of Administration Council of the CS Department
  - 2005–2009: Elected member at the Administration Council of the University
  - 2007–2009: Co-chair of the financial commission of the Administration Council of the University
  - 2010-: Named member of Administration Council of the engineering school EIDD

TrRaining and Education
  - 2005–2007: In charge of internships at the CS Department
  - 2012–2016: In charge of internships at EIDD

- 2019-: Chair of the Master speciality "Embedded software systems" at EIDD (Licence 3, Master 1, Master 2; 20 students / year)

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