

CURRICULUM VITAE

PERSONAL DATA

Name: Gerardo Schneider
Date of Birth: 31-12-67
Place of Birth: Paysandú, Uruguay
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Degrees: Ph.D. in Computer Science (VERIMAG, France)
M.Sc. in Computer Science (UFRGS - Brazil)
System Engineer (UTN - Argentina)
System Analyst (UTN - Argentina)

CURRENT POSITION

- Researcher at IRISA/INRIA. Rennes, France. Working in the french project CASTLES, on verification of Java smart cards.

PREVIOUS POSITION

- October 2002 - October 2003: Researcher (*Forskare*) at the Department of Information Technology, Uppsala University. Uppsala, Sweden. Worked on verification of infinite-state systems and process algebra.

STUDIES

- 1998 - 2002: studied at VERIMAG¹/UJF. Grenoble, France.
Graduate Course: Ph.D. in Computer Science
Thesis Title: Algorithmic Analysis of Polygonal Hybrid Systems
Mention: *Très Honorable*
- 1994 - 1995: studied at UFRGS (Universidade Federal do Rio Grande do Sul). Porto Alegre, Brazil.
Graduate Course: M.Sc. in Computer Science (Two-years course)
Grade: 10 out of 10 points
- 1986 - 1992: studied at U.T.N. (Universidad Tecnológica Nacional). Concepción del Uruguay, Argentina.
Course: Information System Engineering (Six-years course)
Titles: System Analyst / System Engineer
Grade: 8.7 out of 10 points
- February - October 1990: studied at E.S.L.A.I. (Escuela Superior Latino-Americana de Informática), Universidad Nacional de Luján. La Plata, Argentina.

¹ Created in 1993, VERIMAG is an academic research laboratory affiliated with: 1. The scientific University of Grenoble (UJF), 2. The National Research Center (CNRS) and 3. Grenoble Polytechnic Institute (INPG).

- Course: Licentiate in Computer Science (Three-years course)
For 1 semester²
- 1980 - 1985: studied at High School - Paysandú, Uruguay
Scientific Baccalaureate. Option: Engineering
Grade: 9.3 out of 10 points

AREAS OF INTEREST

- Logics in Computer Science
- Formal methods for the specification, derivation and verification of infinite, concurrent and distributed embedded and real-time systems
- Semantics of programming languages
- Functional programming, λ -calculus, type theory
- Concurrency, mobile computing and process algebras
- Security in distributed systems

ACADEMIC AWARDS

- August, 1994: got an academic award as the best student of the 1992/1993 Information System Engineering generation course. Universidad Tecnológica Nacional. Concepción del Uruguay, Argentina

FELLOWSHIPS

- September, 1997 - March, 1998: worked on Design Techniques for Real-Time Systems using Duration Calculus as a UNU/IIST³ research fellow in Macau. In particular, I have studied an extension of Duration Calculus to give a compositional semantics to the Verilog HDL.

SCHOLARSHIPS

- October, 1998 - July, 2002: got a scholarship to work on the ESPRIT project 26270 (VHS, Verification of Hybrid System) to get a PhD degree at VERIMAG (France).
- March, 1994 - March, 1996: got a scholarship to get my M.Sc. degree in Computer Science at UFRGS (Universidade Federal do Rio Grande do Sul) in Brazil.
- March, 1990 - October, 1990: got a scholarship at E.S.L.A.I. (Escuela Superior Latino-Americana de Informática) in La Plata, Argentina.
- March, 1988 - March, 1990: got a scholarship in 'Plan Constelación' to teach Informatics for High School teachers at U.T.N. (Universidad Tecnológica Nacional) in Concepción del Uruguay, Argentina.

WORKING EXPERIENCE

Industry

- March, 1991 - March, 1994: worked as System Engineer in systems design and implementation in Paylana S.A. (Textile Industry - Paysandú, Uruguay). Participated in the development of a Linear Programming model.

² E.S.L.A.I. course was not finished, because the University was closed in October 1990 by economical and political reasons. There the students used to have a scholarship that included: a salary, an apartment, transportation and food. They all were full time students and got into the School after passing an entry examination open to all South America. Only 35 students per year were accepted.

³ United Nations University / International Institute for Software Technology

Academy

- August, 1997 - July 1998: Assistant Professor (*Professor Adjunto*) in Computer Science (Bacharelado em Ciência da Computação). Area: Computation Theory at UCPel (Universidade Católica de Pelotas) in Pelotas, Brazil. Besides the teaching activities I was involved in the (co)supervision of many undergraduate students. Courses taught⁴:
 - August, 1997 - December, 1997:
 - * Data Structures (*Estrutura de dados*), 68 hours
 - * Formal Languages and Automata Theory (*Linguagens formais e autômatos*), 3 groups, 34 hours each
 - * Algebraic Structures for Computer Science (*Estruturas algébricas para Computação*), 68 hours
 - March, 1998 - July, 1998:
 - * Discrete Systems I (*Sistemas discretos I*), 68 hours
 - * Discrete Systems II (*Sistemas discretos II*), 2 groups, 51 hours each
- March, 1997 - August, 1997: Visiting Lecturer (*Professor Visitante*) in Computer Science (Bacharelado em Ciência da Computação). Area: Computation Theory at UCPel (Universidade Católica de Pelotas) in Pelotas, Brazil.
- March, 1996 - February, 1997: Coordinator of 'Tecnólogo em Processamento de Dados' course at Núcleo Universitário de Vacaria, U.C.S. (Universidade de Caxias do Sul) in Caxias do Sul, Brazil.
- March, 1996 - February, 1997: Assistant Professor (*Professor Adjunto*) in Computer Science (Bacharelado em Ciência da Computação). Area: Computation Theory at U.C.S. (Universidade de Caxias do Sul) in Caxias do Sul, Brazil. Courses taught:
 - March, 1996 - July, 1996:
 - * Programming (*Programação de Computadores*), 60 hours
 - * Theory of Computing (*Teoria da Computação*), 60 hours
 - July, 1996 (Summer Course):
 - * Programming (*Programação de Computadores*), 60 hours
 - August, 1996 - December, 1996:
 - * Logics for Computer Science (*Lógica para Computação*), 60 hours
 - * Graph Theory (*Teoria de Grafos*), 60 hours
 - * Programming (*Programação de Computadores*), 60 hours
 - * Theory of Computing (*Teoria da Computação*), 60 hours
 - * Formal Specification of Software (*Especificação Formal de Software*), 60 hours

ACADEMIC EXPERIENCE (Tutorials, Teaching assistance, etc.)

- January, 2001 - April, 2001: Tutor in a Computability course given by Prof. Eugene Asarin at UJF (Université Joseph Fourier), Grenoble, France.
- 26 Jun 2000 - 07 July 2000: Assistant on
 - "Model Checking", by Prof. Edmund M. Clarke (Carnegie Mellon University);
 - "Synchronous Programming for Reactive Systems", by Dr. Pascal Raymond (VERIMAG). At INRIA/CEA/EDF École d'été de Méthodes Formelles (Summer School on Formal Methods). Château Le Bréau, France.
- March, 1987 - February, 1994: Tutor at the System Engineer course at U.T.N. (Universidad Tecnológica Nacional) in Concepción del Uruguay, Argentina. Subjects:
 - April, 1993 - December, 1993: Tutor in Computing IV (*Ayudante de 2da Interino en Computación IV*)
 - February, 1992 - December, 1993: Tutor in Models and Simulations II (*Ayudante de 2da Interino en Modelos y Simulación II*)
 - May, 1991 - March, 1993: Tutor in Computing II (*Ayudante de 2da Interino en Computación II*)

⁴ From September 1997 till end of February 1998 I was a research fellow at UNU/IIST, hence I was dispensed of my teaching obligations at the University.

- June, 1989 - March, 1990: Tutor in Calculus II (*Ayudante de 2da Interino en Análisis Matemático II*)
- March, 1987 - June, 1988: Tutor *ad-honorem* in Programming I (*Ayudante de 2da Ad-honorem en Programación I*)
- March, 1987 - March, 1988: Tutor *ad-honorem* in Organisational Structure (*Ayudante de 2da Ad-honorem en Estructura de las Organizaciones*)

ORGANISATION AND COORDINATION OF WORKSHOPS/SYMPOSIUMS

- 6-8 November, 1996: Coordinator of the 1st Symposium in Informatics. University Campus of Vacaria, University of Caxias do Sul, Brazil.

PARTICIPATION IN PROJECTS

- Currently working in the French project CASTLES: “Static Analyses for Secure Embedded Systems”. Academic partners: INRIA Sophia-Antipolis, INRIA/IRISA Rennes; Industrial partners: AQL, Oberthur Card Systems.
- October, 2002 - October, 2003: Participated in the European project ADVANCE, Contract No. IST-1999-29082. Worked on the verification of infinite-state systems applied to process algebra.
- October, 1998 - October 2001: Participated in the European project ESPRIT-LTR 26270 VHS (Verification of Hybrid systems). Part of my Ph.D. thesis was supported by this project.
- March, 1997 - August, 1998: Coordinated (locally, at UCPel) the project QaP-FOR “Application of formal methods to the improvement of quality and productivity in software development” (*Aplicação de métodos formais para a melhoria da qualidade e produtividade em software*), financed by FAPERGS (*Fundação de Amparo à Pesquisa do Rio Grande do Sul*). Pelotas, Brazil.

PUBLICATION LIST

On-going Work

1. D. Cachera, T. Jensen, D. Pichardie and G. Schneider. **A Certified Memory Analyser for Java Cards**. Submitted.
2. G. Schneider. **A Constraint-based Algorithm for Estimating Memory Usage on Java Cards**. Submitted.
3. G. Schneider. **Computing Phase Portrait Objects of Polygonal Hybrid Systems on Surfaces**. Submitted.

Journal Papers

1. G. Schneider. **Computing Invariance Kernels of Polygonal Hybrid Systems**. In: Nordic Journal of Computing 11 (2): 194–210, 2004.

Refereed Contributions in Conference and Workshops Proceedings

1. P. Giambiagi, G. Schneider and F.D. Valencia. **On the expressiveness of infinite behavior and name scoping in process calculi**. In: FOSSACS’04. LNCS Nro. 2987. Barcelone, Spain, p.226–240. March 27 - April 04, 2004.
2. G. Pace and G. Schneider. **Model checking polygonal differential inclusions using invariance kernels**. In: VMCAI’04. LNCS Nro. 2937. Venice, Italy, p.110–121. January 11-13, 2004.

3. E. Asarin and G. Schneider. **Widening the boundary between decidable and undecidable hybrid systems.** In: CONCUR'02. LNCS Nro. 2421. Brno, Czech Republic, p.193–208. August 20–23, 2002.
4. E. Asarin, G. Pace, G. Schneider and S. Yovine. **SPeeDI - a Verification Tool for Polygonal Hybrid Systems.** In: CAV'2002. LNCS Nro. 2404. Copenhagen, Denmark, p.354–358. July 27–31, 2002.
5. E. Asarin, G. Schneider and S. Yovine. **Towards Computing Phase Portraits of Polygonal Differential Inclusions.** In: HSCC'2002 (Hybrid Systems: Computation and Control). LNCS Nro. 2289. Stanford, USA, p.49–61. March, 2002.
6. E. Asarin, G. Schneider and S. Yovine. **On the Decidability of the Reachability Problem for Planar Differential Inclusions.** In: HSCC'2001 (Hybrid Systems: Computation and Control). LNCS Nro. 2034. Rome, Italy, p.89–104. March, 2001.
7. G. Laferriere, G.J. Pappas, G. Schneider and S. Yovine. **Parameter Synthesis in Robot Motion Planning Using Symbolic Reachability Computation.** In: Proceedings of 8th IEEE Mediterranean Conference on Control and Automation. Rio, Greece. July, 2000.
8. G. Schneider and Xu Qiwen. **Towards a Formal Semantics of Verilog using Duration Calculus.** In: FTRTFT'98. LNCS Nro. 1486. Lyngby, Denmark, p.282–293. September, 1998.
9. G. Schneider and A.C. da Rocha Costa. **Sequential and Parallel Computation Strategies on Coherence Spaces.** In: XXII Latin-American Conference of Informatica CLEI'96, v.1, Bogotá, Colombia, p.276–287. June, 1996.

Other Contributions

1. G. Schneider. **Memory usage estimation for Java cards.** In: NWPT'2004. Uppsala, Sweden, October 06–08, 2004. (Extended Abstract).
2. P. Giambiagi, G. Schneider and F.D. Valencia. **A note on scope and infinite behaviour in CCS-like calculi.** In: NWPT'2003. Turku, Finland, October 29–31, 2003. (Extended Abstract).
3. G. Schneider. **Computing invariance kernels of polygonal hybrid systems.** In: NWPT'2003. Turku, Finland, October 29–31, 2003. (Extended Abstract).
4. G. Schneider and A.C. da Rocha Costa. **Coherence Space as Event Structure and Concrete Data Structure.** In: XXIV SEMISH, Seminário Integrado de Software e Hardware, Brasilia, Brazil, p.423–434, August, 1997.
5. G. Schneider and R. Accorsi. **Introduction to Linear Logic.** In: Primeiro Workshop sobre Métodos Formais e Qualidade de Software, Porto Alegre, Brazil, p.15–42, July, 1997. (Survey, in portuguese)
6. G. Schneider and L.V. Toscani. **Fixed point theory in Computer Science.** In: Anais do Congresso Nacional de Matemática Aplicada e Computacional (CNMAC'95), v.1, Curitiba, Brazil, p.150–154, August, 1995. (Extended abstract, in Portuguese).

Technical Reports

1. G. Schneider. **A constraint-based algorithm for analysing memory usage on Java cards.** Technical Report No. RR-5440, INRIA, Rennes. December 2004, 26 pages.
2. P. Giambiagi, G. Schneider and F.D. Valencia. **On the expressiveness of CCS-like calculi.** Technical Report No. 2004-002, Department of Information Technology, Uppsala University. January 2004.
3. M. Baldamus, R. Mayr and G. Schneider. **A backward/forward strategy for verifying safety properties of infinite-state systems.** Technical Report No. 2003-065, Department of Information Technology, Uppsala University. December 2003. 17 pages.
4. G. Schneider. **Invariance kernels of Polygonal Differential Inclusions.** Technical Report No. 2003-042, Department of Information Technology, Uppsala University. August 2003. 15 pages.
5. G. Schneider and Xu Qiwen. **Towards an Operational Semantics of Verilog.** Technical Report No. 147, UNU/IIST, P.O. Box 3058, Macau, October 1998. 10 p.

6. G. Schneider and Xu Qiwen. **Towards a Formal Semantics of Verilog using Duration Calculus**. Technical Report 133, UNU/IIST, P.O. Box 3058, Macau. March, 1998.
7. P. Giambiagi and G. Schneider. **A Verilog Specification of the STARI**. Technical Report, UNU/IIST, P.O. Box 3058, Macau. March, 1998.
8. G. Schneider and L.V. Toscani. **Fixed point theory in Computer Science**. Porto Alegre: CPGCC da UFRGS, January, 1995. 68p. (Survey, in Portuguese).
9. G. Schneider. **An algebraic specification language**. Porto Alegre: CPGCC da UFRGS, July, 1994. 44p. (Survey, in Portuguese).

Dissertations and Thesis

1. G. Schneider. **Algorithmic Analysis of Polygonal Hybrid Systems**. Ph.D. thesis, VER-IMAG - UJF, Grenoble, France. July 2002, 214 p.
2. G. Schneider. **Sequential and Parallel Computation Strategies on Coherence Spaces**. M.Sc. thesis, CPGCC da UFRGS, Brazil. March 1996, 144 p. (In Portuguese)
3. G. Schneider. **Using Induction for Algorithms Design**. Dissertation, in partial fulfillment of the requirement for the degree of System Engineer. Concepción del Uruguay: Facultad Regional Concepción del Uruguay de la Universidad Tecnológica Nacional, October, 1992, 91p. (In Spanish)

Tools

- **SPeeDI**: Together with Gordon Pace, I have implemented a verification tool for Polygonal Differential Inclusions (SPDI).

RESEARCH VISITS AND INVITED TALKS⁵

- 01-15 December 2003: Visited UCPel (*Universidade Católica de Pelotas*), Pelotas, Brazil. Gave the following talks and mini-courses:
 - “Introduction to hybrid systems”
 - “Algorithmic analysis of polygonal hybrid systems”
 - “Computing invariance kernels of polygonal hybrid systems”
 - “On the expressiveness of CCS-like calculi”
 - Mini-course (12 hours): “Models of concurrency”
- 16-30 November 2003: Visited UFRGS (*Universidade Federal do Rio Grande do Sul*) and PUCRS (*Pontifícia Universidade Católica do Rio Grande do Sul*), Porto Alegre, Brazil. Gave the following talks: “An heuristic for verifying safety properties of infinite-state systems” and “Algorithmic analysis of polygonal hybrid systems”.
- 8-15 October 2003: Visited Prof. Ron van der Meyden’s group at National ICT Australia (NICTA), Sydney, Australia. Gave a talk on “Algorithmic analysis of polygonal hybrid systems”.
- 1-8 September 2002: Visited Prof. Parosh Abdulla’s group at the Department of Information Technology, Uppsala University. Uppsala, Sweden. Gave a talk on “Algorithmic analysis of polygonal hybrid systems”.
- 12-20 August 2002: Visited Dr. Wan Fokkink’s group at CWI. Amsterdam, The Netherlands. Gave a talk on “Algorithmic analysis of polygonal hybrid systems”.
- 11-13 August 2002: Visited Prof. Veronique Bruyère’s group at the Institute of Computer Science, University of Mons-Hainaut. Mons, Belgique. Gave a talk on “Algorithmic analysis of polygonal hybrid systems”.
- 1-5 April 2002: Visited Prof. Rajeev Alur’s group at the Department of Computer and Information Science, University of Pennsylvania. Philadelphia, USA. Gave a talk on “Algorithmic analysis of polygonal piecewise constant differential inclusions”.

⁵ Do not include the talks given in Conferences or Workshops.

- 28 March 2002: Visited Dr. Michael Lowry’s group at the Automated Software Engineering Group, NASA Ames Research Institute. Moffet Field (CA), USA. Gave a talk on “Algorithmic analysis of polygonal piecewise constant differential inclusions”.
- 21-23 March 2002: Visited Prof. Pravin Varaiya’s group at the Electrical Engineering and Computer Science Department, Berkeley University. Berkeley (CA), USA. Gave a talk on “Algorithmic analysis of polygonal piecewise constant differential inclusions”.
- 5 November 1998: Gave a talk on “Formal Semantics of Verilog using Duration Calculus”, at VERIMAG. Dr. Joseph Sifakis’ group. Grenoble, France.

LANGUAGES

- Spanish: First language.
- Portuguese: Fluent.
- French: Fluent.
- English: Fluent.
- Italian: Good.

REFERENCES

These five persons have agreed in providing, upon your request, a reference about me and my abilities.

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| <p>Prof. Dr. Rajeev Alur Department of Computer and Information Science University of Pennsylvania 3330 Walnut Street Philadelphia, PA 19104 USA Phone: (215) 573-7483 E-mail: alur@cis.upenn.edu</p> | <p>Dr. Joseph Sifakis VERIMAG 2 avenue de Vignate 38610 - GIERES FRANCE Phone: +33 (0)4 56 52 03 51 E-mail: Joseph.Sifakis@imag.fr</p> |
| <p>Dr. Sergio Yovine VERIMAG 2 avenue de Vignate 38610 - GIERES FRANCE Phone: +33 (0)4 56 52 03 77 E-mail: Sergio.Yovine@imag.fr</p> | |