Curriculum Vitae

Jean-Pierre Jouannaud

Université Paris-Sud

- Birth: 21 May 1947 at Aix-les-Bains, France
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- Curriculum:
  1. Ecole Polytechnique (Paris), 1967–1969
  2. DEA (Master Thesis), Université de Paris 6, 1970
  3. Thèse de 3ème cycle (Phd thesis), Université de Paris 6, 1972
  4. Thèse d'état (Habilitation), Université de Paris 6, 1977
- Positions:
  1. 1/10/71-30/09/72: Assistant (Teaching Assistant), Université de Paris 6
  2. 1/10/72-30/09/78: Maître-Assistant (Assistant Professor), Université de Paris 6
  3. 1/01/79-31/09/85: Professeur de 2ème classe (Associate Professor), Université de Nancy
  4. 1/10/85-1/10/86: Professeur de 2ème classe (Associate Professor), Université de Paris-Sud à Orsay
  5. 1/10/86-31/09/92: Professeur de 1ère classe (Full Professor), Université de Paris-Sud à Orsay
  6. 1/10/92-: Professeur de classe exceptionnelle (?), Université de Paris-Sud à Orsay
- Secondary Positions:
  1. 1/10/75-30/09/83: Assistant professor at Ecole Polytechnique, Palaiseau, France.
  2. 1/08/84-31/12/87: Consultant, SRI-International, Menlo-Park, USA.
  3. 1/05/87-31/12/89: Consultant, HP-Laboratories, Bristol, UK.
  4. 1/01/91-31/12/93: Consultant, INRIA, France.
- Invitations:
  1. 1/08/83-31/07/84: International Research Fellow, SRI-International, Menlo-Park, USA.
  2. 15/10/84-15/12/84: Invited Scientist, CSLI, Stanford University, USA.
  3. 1/10/85-31/10/85: Invited Scientist, CSLI, Stanford University, USA.
  4. 1/08/87-31/09/87: International Research Fellow, SRI-International, Menlo-Park, USA.
  5. 1/05/88-31/05/88: Invited Professor, Concordia University at Montreal, Canada.
  6. 1/06/89-31/06/89: Invited Professor, National Taiwan University, Taipeh, Taiwan.
  7. 1/04/90-15/04/90: Invited Professor, ESLAI at Buenos-Aires, Argentina.
  8. 1/12/91-20/12/91: Invited Scientist, ETL, Tsukuba, and ICOT, Tokyo, Japan.
  9. 1/09/94-30/09/94: Invited Professor, Technical University of Barcelona, Spain.
  10. 1/10/94-15/10/94: Invited Scientist, Polish Academy of Sciences, Varsaw, Poland.
  11. 1/09/95-31/12/95: Invited Professor, Technical University of Barcelona, Spain.
  12. 1/01/96-28/02/96: Invited Professor, Keio University, Japan.
  13. 1/03/96-30/09/96: International Research Fellow, SRI-International, Menlo-Park, USA.
  14. 1/04/98-30/04/98: Invited Professor, Keio University, Japan.
  15. 1/03/99-30/03/99: Invited Professor, National Taiwan University in Taipei, Taiwan.
- Service:
  1. Director of Phd Studies, Orsay, 1985-1987
  2. Department Vice-Chairman (Research), Orsay, 1987-1992

3. Department Chairman, Orsay, 1992-1995
4. National Recruiting Committee for Computer Science, 1986-1991
5. CNRS Committee for Information Technology, 1991-1995
6. CNRS Committee for Engineering Sciences, 1991-1995
7. Scientific Committee of the German Max-Planck Institute for Computer Science, 1993-1999

– Program Committees of International Conferences: 1st RTA (1985, PC Chair), 3rd FPLCA (1985), 8th CADE (1986), 2nd LICS (1987), 13th ICALP (1987), 3rd RTA (1989), 10th CADE (1990), 5th LICS (1990), 13th CAAP (1993, PC Chair), 19th ICALP (1993), 1st CCL (1994, PC Chair), 21th ICALP (1995), 4th CSL (1995), 1st WRL (1996), 24th ICALP (1998), 2nd WRL (1998), CAFE-OBJ Workshop (1999), 1st FOSSACS (2000), 11th RTA (2000), 3rd WRL (2000), 1st DSVV (2000), 27th ICALP (2001).
– Steering Committees of International Conferences: RTA (1989-1994), LICS (1993-1997), CP (1994-), CSL (1993-1997), FLoC (1995-1999)
– Boards of scientific associations: council of EATCS (1997-), Chairman of AFIT (1997-).
– Editorial Boards:
  1. Journal of Symbolic Computation, Main Editor: Bruno Buchberger, until 1992
  2. Constraints, An International Journal, Main Editor: Gene Freuder
  3. Information and Computation, Main Editor: Albert Meyer, until 1999
  4. Methods of Logic in Computer Science, Main Editor: Ralph Wilkerson, until 1996
  5. Progress in Theoretical Computer Science, Main Editor: Ronald Book, until his death in 1997
– Honors:
  1. CNRS Silver Medal (given to "EURECA", the team I created and lead in Nancy), 1986
  2. Prix Montpetit de l'Académie des Sciences, 2000
– Phd Students: above 20, 13 of them in the academia: Alexandre Boudet (Researcher at CNRS, Orsay), Hubert Comon (Research Director at CNRS, Ecole Normale Supérieure de Cachan), Evelyne Contejean (Researcher at CNRS, Orsay), Maribel Fernandez (Assistant professor at Ecole Normale Supérieure de Paris, rue d'Ulm), Marianne Haberstrau (Assistant professor at IUT, Orsay), Claude Kirchner (Research Director at INRIA, Nancy), Hélène Kirchner (Research Director at CNRS, Nancy), Emmanuel Kounalis (Associate Professor at Nice), Claude Marché (Assistant Professor at Orsay), Fernand Reining (Professor at Luxembourg), Jean-Luc Rémy, (Researcher at CNRS, Nancy), Walid Sadfi (Assistant Professor at Tunis), and Jean-Pierre Treuil (Research Director at ORSTOM). I currently supervise 4 phd theses.
– Languages: French (mother language), English (fluent), German (Früher, kannte ich sehr gut deutch sprechen), Japonese (Watakushi wa hanasu-koto ga sukoshi dekimasu).
– Other interests: fishing, climbing, skying, windsurfing, music, literature, poetry.
– Publications and Presentations:
  1. Theses:
     [37, 38]
  2. Journals and book chapters:
     [84, 83, 29, 73, 72, 77, 80, 74, 65, 66, 78, 79, 104, 41, 17, 76, 4, 60, 43, 16, 86, 63, 51, 48, 13, 23, 50, 102, 92, 99, 9, 7, 27, 10, 99, 2]
  3. Papers presented at conferences or workshops:
     [81, 82, 30, 31, 69, 71, 70, 58, 59, 61, 40, 67, 64, 88, 26, 28, 75, 3, 33, 85, 18, 90, 89, 12, 19, 21, 101, 45, 20, 96, 5, 1, 97]
  4. Invited lectures at conferences or workshops:
     [39, 68, 32, 35, 62, 42, 34, 44, 36, 50, 51, 47, 22, 52, 91, 8, 6, 54, 53, 24, 55, 56, 103, 57]
  5. Unpublished reports:
     [11, 94, 46, 95, 49, 15, 93]
  6. Submitted:
     [98]

7. Work in progress:
   [25, 14, 87]

Most papers published in journals or as chapters in books (in long version) were previously presented at conferences (in preliminary version), therefore appear twice. The converse is not true.

– Research Interests:

My research interests have evolved quite a lot during my career. Changes have been impulsed by my environment during the 70s, and by my research later.

1. Signal processing: see, e.g., [83]
2. Program Inference and Transformation: see, e.g., [74]
3. Rewriting: see, e.g., [17]
4. Rewriting Modulo: see, e.g., [66]
5. Conditional Rewriting: see, e.g., [104]
6. Termination proof methods: see, e.g., [88]
7. Modular properties of term rewriting systems: see, e.g., [48]
8. Algebraic specification languages: see, e.g., [26, 8]
9. Theorem proving: see, e.g., [76, 5]
10. Unification: see, e.g., [60]
11. Axiomatization of first-order theories: see, e.g., [13]
12. Higher-order orderings: see, e.g., [99]
13. Higher-order rewriting: see, e.g., [92]
14. Rewriting and type theory: see, e.g., [1]

My recent research falls into three different categories.

The first is moreless traditionnal, dealing with first-order structures, and belongs to the items 7 and 8. It is done in collaboration with José Meseguer, Senior Scientist at SRI, and Kokichi Futatsugi, professor at the Japan Advanced Institute for Sciences and Technology, with who I have been sharing research interests for over 15 years. The long term goal is the use of algebraic techniques (in a broad sense) for the specification and verification of software.

The second deals with higher-order structures, hence reflects an orientation initiated in the late 80s by Val Tannen, Tobias Nipkow, Mitsuhiro Okada, and myself. It belongs to the items 12, 13 and 14 above. The main problem that has been adressed is to incorporate rewriting techniques into type theories. The challenge here is to unify rewriting and type theory in a logically coherent framework supporting the Curry-Howard isomorphism. I believe that this work will eventually benefit to type theory in two ways: by bringing a more algebraic view of the notion of an inductive type based on the use of tree automata; and by an improved view of a proof as a combination of deduction and computation steps. This view has been presented in [56].

The third, which can be seen as the missing link between the first two, is theorem proving, belonging to item 9. Traditionnal, automated theorem proving is first-order. More recently, interactive proof assistants have been built all over the world, with the hope to prove programs correct. All lack an essential feature: automaticity. I believe that tradition and innovation should join their forces and come up with proof assistants which are interactive when dealing with higher-order features, and as automatic as possible when dealing with "essentially" first-order ones. Term rewriting techniques have their word to say in this enterprise. Currently, my group at Orsay has both kinds of expertise, since we are involved in the development of Coq, a proof assistant based on the calculus of inductive constructions, and the development of CiME, an automated prover based on normalized rewriting, a variant of rewriting inspired by Gröbner bases computations. Integrating both is our long term goal, which raises difficult practical and theoretical problems (besides those mentionned in the second category). I currently supervise 3 thesis works addressing these questions.

It is interesting to notice that my team has been a leading force in the use of tree automata, first in rewriting theory, then in constraint solving, more recently in automated theorem proving, and lately for starting a study of quotient inductive types.

– Current Project:
To scale up the secure proof system Coq, by incorporating pattern matching definitions, decision procedures, and a module system. This project is funded by RNRT under the name of CALIFE (principal investigator: ALCATEL), and by FRANCE TELECOM.

References

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2. Frédéric Blanqui, Jean-Pierre Jouannaud, and Mitsuhiro Okada. Inductive Data Type Systems. to appear in TCS, 2000.
3. Alexandre Boudet, Jean-Pierre Jouannaud, and Manfred Schmidt-Schauß. Unification in free extensions of Boolean rings and Abelian groups. In *Proc. 3rd IEEE Symp. Logic in Computer Science, Edinburgh*, July 1988.
4. Alexandre Boudet, Jean-Pierre Jouannaud, and Manfred Schmidt-Schauß. Unification in Boolean rings and Abelian groups. *Journal of Symbolic Computation*, 8:449–477, 1989.
5. Adel Bouhoula and Jean-Pierre Jouannaud. Automata-driven automated induction. In *Proc. 12th IEEE Symp. Logic in Computer Science, Varsaw*. IEEE Comp. Soc. Press, 1997.
6. Adel Bouhoula and Jean-Pierre Jouannaud. Automata-driven automated induction. In *Workshop on Tree Automata Techniques and Applications, Dagstuhl, Allemagne*. IEEE Comp. Soc. Press, 1997.
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8. Adel Bouhoula, Jean-Pierre Jouannaud, and José Meseguer. Specification and proof in membership equational logic. In Michel Bidoit and Max Dauchet, editors, *Proc. TAPSOFT'97, Lille, France*, volume 1214 of *Lecture Notes in Computer Science*, pages 67–92. Springer-Verlag, 1997.
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10. Hubert Comon, Mehmet Dincbas, Jean-Pierre Jouannaud, and Claude Kirchner. A methodological view of constraint solving. *Constraints, an International Journal*, 4(4): 314–337, december 1999.
11. Hubert Comon, Marianne Haberstrau, and Jean-Pierre Jouannaud. Ecolog : un environnement pour la programmation en logique contrainte. 1990.
12. Hubert Comon, Marianne Haberstrau, and Jean-Pierre Jouannaud. Decidable properties of shallow equational theories. In *Proc. 7th IEEE Symp. Logic in Computer Science*, Santa Cruz, 1992.
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14. Hubert Comon and Jean-Pierre Jouannaud. Logique et combinatoire des termes de premier ordre. Book in preparation, 1998.
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