

Curriculum Vita

John S. Schlipf

Professor, Computer Science, and Member of the Graduate Faculty
Department of Electrical & Computer Engineering and Computer Science
College of Engineering
The University of Cincinnati

Employment History

- 1983-Present: Professor of Computer Science (1993-Present)
Associate Professor of Computer Science (1987-1993),
Assistant Professor of Computer Science (1984-1987),
and Assistant Professor of Mathematical Sciences (1983-1984),
University of Cincinnati.
- 1996-1997: Associate Head for Computer Science
Dept. of Electrical & Computer Engineering & Computer Science
University of Cincinnati
- Spring 1995: Visiting Scholar, University of Kentucky
- Summer 1991: Visitor at Mathematical Sciences Institute, Cornell University.
- 1981-1983: Senior Computer Specialist, Dynamac Corporation,
Information and Management Systems Division.
Part time instructor in computer science at St. Mary's College of Maryland.
- 1979-1981: Assistant Professor of Mathematics, St. Mary's College of Maryland.
- 1977-1977: Visiting Lecturer in Mathematics, University of Illinois, Urbana-Champaign.
- 1975-1977: Bateman Research Instructor of Mathematics, California Institute of Technology.

Education

- 1966-1970: Undergraduate, Carleton College, Northfield, Minnesota.
B.A. 1970, mathematics, magna cum Laude.
- 1970-1975: Graduate student, mathematics, University of Wisconsin, Madison.
M.A. 1972, mathematics.
- Ph.D. 1975, mathematics; major area: mathematical logic.

Research Articles

1. "On recursively saturated models of arithmetic", *Model Theory and Algebra: A Memorial Tribute to Abraham Robinson*, D.H. Saracino and V.B. Weispfenning, eds., Springer-Verlag, 1975, 42-55. Co-authored with Jon Barwise.
2. "An introduction to recursively saturated and resplendent models", *Journal of Symbolic Logic* 41, 1976, 531-536. Co-authored with Jon Barwise.
3. "A guide to the identification of admissible sets above structures", *Annals of Mathematical Logic* 12, 1977, 151-192.
4. "Ordinal Spectra of first order theories", *Journal of Symbolic Logic* 42, 1977, 492-505.
5. "Toward model theory through recursive saturation", *Journal of Symbolic Logic* 43, 1978, 183-206.
6. "A generalized Kleene-Moschovakis theorem", *Proceedings of the American Mathematical Society* 68, 1978, 209-214. Co-authored with Leo Harrington and Lefteris Kirousis.
7. "Recursively saturated models of set theory", *Proceedings of the American Mathematical Society* 80, 1980, 135-142.
8. "Generating subsets of order statistics with applications to trimmed means and means of trimmings", *Journal of Statistical Computation and Simulation* 24, 1986, 83-97. Co-authored with Paul Horn.
9. "How uncomputable is general circumscription?", *Proceedings of the Symposium on Logic in Computer Science* (of the IEEE), 1986, 92-95.
10. "Who's being swindled? A case for enlightened naïvité", *Journal of Statistical Computation and Simulation* 26, 1986, 21-36. Co-authored with Paul Horn.
11. "Definability and decidability using circumscription", *Annals of Pure and Applied Logic* 35, 1987, 173-191.
12. "When is closed world reasoning tractable?", *Proceedings of the Third International Symposium on Methodologies for Intelligent Systems*, 1988, 485-494
13. "The well-founded semantics for general logic programs", *Journal of the ACM* 38(3), 1991, 620-650. Co-authored with Allen Van Gelder and Kenneth Ross.
14. "Representing epistemic intervals in logic programming", in A. Nerode, W. Marek, and V.S. Subramahnan, editors, *Logic Programming and Non-monotonic Reasoning: Proceedings of the First International Workshop*, MIT Press, 1991, 133-147.

15. “Formalizing a logic for logic programming”, *Annals of Mathematics and Artificial Intelligence* 5, 1992, 279-302.
16. “The expressive powers of the logic programming semantics”, *Journal of Computer and Systems Sciences* 51 (1995), pp. 64–86. A preliminary version appeared in *Proceedings of the Eighth Annual ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems*, 1990, 196-204.
17. “Common sense axiomatizations for logic programs”, *Journal of Logic Programming* 17 (1993), pp. 161-195. Co-authored with Allen Van Gelder.
18. “The expressiveness of locally stratified programs”, *Annals of Mathematics & Artificial Intelligence* 15(1995), pp. 209-229. Co-authored with Howard Blair and Wiktor Marek.
19. “Unique satisfiability of Horn sets can be solved in nearly linear time”, *Discrete Applied Mathematics* 60 (1995), pp. 77–91. Co-authored with Kenneth Berman and John Franco.
20. “Complexity and undecidability results in logic programming”, *Annals of Mathematics and Artificial Intelligence* 15 (1995), pp. 257-288. A preliminary version appeared in the proceedings of the Workshop on Recursion-theoretic Methods in Logic Programming, 1992 Joint International Conference and Symposium on Logic Programming.
21. “On finding solutions for extended Horn formulas”, *Information Processing Letters* 54(1995) 133-137. Co-authored with Fred Annexstein, John Franco, and R. P. Swaminathan.
22. “Some remarks on computability and open domain semantics”, proceedings of the Workshop on Structural Complexity and Recursion-Theoretic Methods in Logic Programming of the International Logic Programming Symposium, Vancouver, B.C., October, 1993.
23. “Computing the well-founded semantics faster”, *Logic Programming and Nonmonotonic Reasoning*, Proceedings of the Third International Conference (June, 1995), V. W. Marek, A. Nerode, and M. Truszczyński, eds, *Springer Verlag Lecture Notes in Artificial Intelligence* 928, pp. 113-126. Co-authored with Kenneth Berman and John Franco.
24. “Affordable classes of normal logic programs,” *Logic Programming and Nonmonotonic Reasoning*, Proceedings of the Fourth International Conference (July, 1997), J. Dix, U. Furbach, and A. Nerode, eds., *Springer-Verlag Lecture Notes in Artificial Intelligence* 1265, pp. 92-111. Co-authored with Jennifer Seitzer.

25. “An algorithm for the class of pure implicational formulas”, *Discrete Applied Mathematics* 96-97 (1999), pp. 80-106. Co-authored with John Franco, Judy Goldsmith, Ewald Speckenmeyer, and R. P. Swaminathan.
26. “An empirical study of the 4-valued Kripke-Kleene and 4-valued well-founded semantics in random propositional logic programs,” *Annals of Mathematics and Artificial Intelligence* 25 (1999), pp. 275-309. Co-authored with Chris Giannella. (A preliminary version appeared in *Proceedings of the Logic Programming Workshop of the Seventh International Workshop on Nonmonotonic Reasoning* (Trento, Italy, May-June, 1998).
27. “Reconfigurable interconnect synthesis via quantified Boolean satisfiability,” proceedings of the Fifth International Symposium on Theory and Applications of Satisfiability Testing, Mini Workshop on Quantified Boolean Formulas, (May, 2002). Co-authored with Subramanyan Siva, Ranga Vemuri, W. Mark Vanfleet, and John Franco.
28. SBSAT: “A state-based, BDD-based, satisfiability solver.” To appear in *Annals of Math. and AI*. Co-authored with John Franco, Michal Kouril, Jeffrey Ward, Sean Weaver, Michael Dransfield, and W. Mark Vanfleet.
29. “Answer set programming with clause learning,” Proceedings of the 7th International Conference on *Logic Programming and Nonmonotonic Reasoning*, V. Lifschitz and I. Niemelä, eds., *Springer Verlag Lecture Notes in AI #2923* (2004), pp. 302-313. Co-authored with Jeffrey Ward.
30. “Function-complete lookahead in support of efficient SAT search heuristics,” with J. Franco, M. Kouril, S. Weaver, M. Dransfield, and W.M. Vanfleet. To appear in *J. Universal Computer Science*.

Book and Book Chapter

1. “A comparison of notions of negation as failure”, in *Advances in Logic Programming Theory*, Giorgio Levi ed., Clarendon Press, Oxford, 1994, pages 1-53.
2. *Discrete Mathematical Structures for Computer Science*. Co-authored with Gary Haggard and Sue Whitesides. Thomson-Brookes/Cole, Belmont, CA, 2006.

Invited Addresses

1. “On recursively saturated models”, presented to the University of Oslo, Norway, logic seminar, June, 1975.
2. “Relative constructibility and model theory”, presented to the annual logic meeting at UCLA, November, 1975.
3. “Ordinal spectra of first order theories”, presented to the Association for Symbolic Logic in Reno, Nevada, April, 1975.
4. “Scribblings on papers of Kirby and Paris and Paris and Harrington”, presented to the American Mathematical Society (special session on model theory and recursion theory) in Houston, Texas, April, 1978.
5. “Next admissible sets and structures for infinite languages”, presented to the American Mathematical Society (special session on countable models) in Honolulu, Hawaii, April, 1979.
6. “When is closed-world reasoning tractable?”, presented to the University of Kentucky computer science seminar, November, 1986.
7. “Three valued epistemic logic and logic programming”, presented to the University of Kentucky computer science seminar, November, 1987.
8. “The well-founded semantics for logic programming”, colloquium at the Department of Computer Science, University of Kentucky, November, 1989.
9. “Formalizing a logic for logic programming”, presented to the First International Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, Florida, January, 1990.
10. “The expressive power of the well-founded semantics for logic programming”, colloquium at the School of Computer and Information Sciences, Syracuse University, August, 1991.
11. “The well-founded and stable semantics for logic programming”, Indiana University logic seminar, September, 1991.
12. “A framework for comparing different notions of negation”, a series of five lectures at the Fourth International School for Computer Science Researchers, Acireale, Italy, June 29-July 3, 1992.

13. “An algorithm for unique satisfiability of Horn clauses”, mathematics colloquium, University of Siena (Italy), July, 1992.
14. “Kripke models for logic programming with partial information”, Dagstuhl seminar on Nonclassical Logics in Computer Science, SchloßDagstuhl, Saarland, Germany, September, 1993.
15. Panel discussion on recursion theory in logic programming and nonmonotonic reasoning, at the Logic Programming and NonMonotonic Reasoning Retreat, Shakertown, Kentucky, October 1994. With Howard Blair and Jeffrey Remmel.
16. “Well-founded semantics for revision programs”, series of 2 seminar talks, presented to the Logic and Artificial Intelligence Seminary, University of Kentucky, April 1995.
17. “An algorithm for the class of pure implicational formulas”, Workshop on the Satisfiability Problem, Siena, Italy, April 1996.
18. “An algorithm for the class of pure implicational formulas”, Fifth International Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, Florida, January, 1998.
19. “SBSAT: A State-Based, BDD-Based Satisfiability Solver,” presented to the Dagstuhl workshop on Answer Set Programming, September, 2002.
20. Panel discussion on the role of logic in undergraduate computer science curricula, at the 2004 annual meeting of the Association for Symbolic Logic, Pittsburgh, May 2004. With Jeremy Avigad, Kim Bruce, and Peter Henderson.
21. “On the distribution of programs with stable models,” presented to the Dagstuhl workshop on Answer Set Programming, May, 2005. Research was joint with Douglas Wong and Mirek Truszczyński.

Refereed Addresses

1. “Another formulation for circumscription”, presented to the Logic and Computer Science Workshop, Lexington, Kentucky, June, 1985.
2. “How uncomputable is general circumscription?”, presented to the First Annual Conference on Logic in Computer Science of the IEEE, ACM, and ASL, Cambridge, Massachusetts, June, 1986.
3. “When is closed world reasoning tractable?”, presented to the Third International Symposium on Methodologies for Intelligent Systems, Turin, Italy, October 1988.
4. “The expressive powers of the logic programming semantics”, presented to the ninth Symposium on Principles of Database Systems, Nashville, Tennessee, April, 1990.
5. “Representing epistemic intervals in logic programming”, presented to the First International Workshop on Logic Programming and Non-Monotonic Reasoning, Washington, D.C., July, 1991.
6. “A survey of complexity and undecidability results in logic programming”, presented to the Workshop on Recursion-theoretic Methods in Logic Programming, held in conjunction with the 1992 Joint International Conference and Symposium on Logic Programming.
7. “Some remarks on computability and open domain semantics”, presented to the Workshop on Structural Complexity and Recursion-Theoretic Methods in Logic Programming, held in conjunction with the International Logic Programming Symposium, Vancouver, B.C., October, 1993.
8. “On finding solutions for extended Horn formulas”, presented to the First International Joint Workshop on Artificial Intelligence and Operations Research, Timberline, Oregon, June, 1995.
9. “Computing the well-founded semantics faster”, presented to the Third International Conference on Logic Programming and Nonmonotonic Reasoning, Lexington, KY, June, 1995.
10. “SBSAT: A State-Based, BDD-Based Satisfiability Solver,” presented to the Sixth International Conference on Theory and Applications of Satisfiability Testing,” May, 2003.

Graduate Students Supervised

David Sims M.S., University of Cincinnati, 1992
Jennifer Seitzer Ph.D., University of Cincinnati, 1997
 Dissertation: *A Study of the Well-Founded and Stable Logic Programming Semantics*
Thomas Wulf M.S., University of Cincinnati, 2000
Jeffrey Ward Ph.D., the Ohio State University, 2004; co-advised by Timothy Long
 Dissertation: *Answer Set Programming with Clause Learning*

Refereed for

Journal of Computer and Systems Sciences *Journal of Symbolic Logic*
Notre Dame Journal of Formal Logic *Proceedings of the AMS*
Journal of Logic Programming *Theoretical Computer Science*
National Science Foundation Israel Science Foundation

Professional Associations

Association for Computing Machinery (ACM) American Mathematical Society (AMS)
Association for Symbolic Logic (ASL) Sigma Xi

Grants

1976-1977: NSF Grant MCS-76-17254 with Alexander Kechris (Mathematics)
1984: Taft Summer Faculty Grant, University of Cincinnati
1986: Taft Summer Faculty Grant, University of Cincinnati
1988-1989: NSF Grant IRI-87-05184 (Knowledge & Database Systems)
1989-1992: NSF Grant IRI-89-05166 (Knowledge Models & Cognitive Systems)
1993-1996: ONR Grant N00014-94-1-0382, with John Franco
1998-1991 NSF MRI grant 9871345 (instrumentation grant for UC; one of several co-PI's)
1999-2001 DoD contract MDA904-99-C-4547, co-PI with John Franco

Research Interests

Logic and Theoretical Computer Science, including Logic Programming, Nonmonotonic Reasoning and Deductive Databases; Model Theory; Computability; and Computational Complexity.