Dr. Steve Rowley

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Professional Goal: Research/development career in novel computing applications to physics, AI, computer language systems; using my experienced skills in mathematical physics (many-body quantum mechanics, mathematical/numerical analysis), applied artificial intelligence (expert systems, natural language, tool implementation), Lisp. . . . . Prev salary $62K.

Education

PhD Theoretical Nuclear Physics, Massachusetts Institute of Technology . . . . . . *Fall 93*
Invented novel time-dependent mean-field quantum theories. Tested scattering behavior on several nuclear models. Verified via numerical experiments in Lisp/object-oriented databases.

BS Physics, Purdue University . . . . *Spring 77*
With Highest Distinction. Interests in superconductivity and quantum mechanics.

BS Mathematics, Purdue University . . . . *Spring 77*
With Highest Distinction. Interests in differential geometry and topology. GPA 5.96/6.00.

Work Experience

Massachusetts Institute of Technology . . . . *Sept 89 - Sept 90*
Software engineer/mathematical biophysicist in Lab for Intelligent Decision Systems. Designed, implemented, delivered novel structure/behavior simulator for nonmodular systems. Classified state-space orbits of motor nervous system of worm *C. Elegans*. Maintained LIDS Lisp-machine network, printers, application software. Wrote proposals. See publications.

Symbolics, Inc. . . . . *Dec 84 - Sept 88*
Senior Member of Technical Staff in Software Products/AI Tools. Designed, implemented, carried through product status *Joshua*, a high-performance AI language. Wrote customer documentation; trained staff in AI tools. Maintained both system and layered software products. Wrote, acted, produced videos presenting work to customers. See publications.

Free-Lance Consultant . . . . *Jul 83 - Dec 84; Oct 88 - Nov 88*
Clients included Symbolics, Gould, International Lisp Associates. Lead architect for *DC-3*, a Symbolics expert system diagnosing in-factory breakdowns of Gould 584 programmable controllers; working product delivered. Developed Symbolics customer application demos, videos, presentations in symbolic algebra, aerodynamics, AI planning. See publications.

GTE Laboratories, Inc. . . . . *Jun 82 - Jul 83*
Senior Member of Technical Staff in Knowledge-Based Systems Research. Designed, implemented, debugged natural language access software for Telenet databases, expert system substrate for telephone switch diagnosis, automatic programming, Lisp development tools. Trained staff in AI techniques; presented work to clients/management. Wrote proposals.

Paradigm Associates, Inc. . . . . *Jun 81 - Oct 82*
Cofounded Boston consulting firm (still profitable). Implemented Scheme-like Lisp system. Consulted in applied mathematics for Macsyma users. Created hospital database application.

Purdue University Nuclear Structure Laboratory . . . . *Sept 75 - Sept 77*
Scientific/systems programmer for project applying proton-induced X-ray emission to nuclear structure and water-quality monitoring. Wrote magtape, disassembly, and numerical apps.

Other . . . . *Back in the Late Neolithic*
Construction electrician. Chemist in coffin-handle electroplating factory. Fiberglasser/mold-maker of corrosive gas exhaust fans. Designed and maintained optical instruments. Actor.

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Teaching and Service Experience

Massachusetts Institute of Technology .... *Sept 77 - May 82, Sept 88 - May 89, Jan 91 - May 91, Jan 92 - May 92*

Taught undergraduate courses in mechanics, electrodynamics, waves and optics. Taught graduate-level quantum mechanics. Taught graduate-level EECS courses in artificial intelligence and computational linguistics/natural language processing, with computer labs.

American Association for Artificial Intelligence .... *Summer 1987*

Associate Chair of Program Committee for AAAI-87: recruited referees, resolved referee disagreements (with remarkably little bloodshed), scheduled conference presentations, chaired presentation sessions. Also referee for AAAI-88, AAAI-87, AAAI-86, IJCAI-85.

Massachusetts Institute of Technology .... *Summer 80 - Spring 81*

Free-lance tutor in mathematics and physics through MIT Undergraduate Physics Office.

Professional Skills

Software Engineering: 15 years experience in Lisp software development. Deep ability in Common Lisp, CLOS, CLIM, Scheme; competent in C, Pascal, Fortran, and related languages. Expert with the Symbolics lisp machine; basic Unix survival skills. Expert with symbolic mathematics (Macsyma, Mathematica), object-oriented databases (Statice), expert systems (Joshua). Exceptional applied AI experience in expert systems, natural language, and AI implementation techniques. Interests in denotational semantics/automatic compiler generation; polymorphic type systems, as in ML; innovative scientific computing systems/languages.

Physics/Mathematics: Specialized in quantum many-body problems and their field theories; expert in scattering and S-matrices. Broad knowledge of applied mathematics; good at mathematical and numerical analysis, including stability. Interests in foundations of quantum mechanics and "macro-quantum" phenomena such as coherent states and superconductors.

Communication: Exceptional speaking, presentation, writing and teaching skills.

Recent Publications

1. S. Rowley. *Scattering of Many-Fermion Systems in Time-Dependent Mean Field Theories.* PhD Thesis, 1993, MIT Dept of Physics, Center for Theoretical Physics, and Lab for Nuclear Science.
2. S. Rowley and M. Baranger. "Scattering of Semiclassical Wavepackets," in preparation.
3. S. Rowley and C. Rockland. "The design of simulation languages for systems with multiple modularities," *Simulation* 56:3 (Mar 1991), pp 153-163.
4. C. Rockland and S. Rowley. "Simulation and analysis of segmental oscillator models for nematode locomotion," MIT Center for Intelligent Control Systems CICS-P-212, Apr 1990.
5. S. Rowley. *Jericho: The Joshua Test, Demo, and Benchmark Suite.* Symbolics, Inc. 1988.
6. S. Rowley and J. Covo. "Joshua," Symbolics, Inc., 1988 (videotape).
7. S. Rowley *et al.* "Joshua: Uniform Access to Heterogeneous Knowledge Structures," *Proceedings of AAAI-87*, pp 48-52. Paper nominated for Publisher's Prize.
8. W. Taylor, S. Rowley, and R. Soley. "DC-3: An Industrial Expert System," in *Expert Systems and Knowledge Engineering, Proc. Gottlieb Duttweiler Inst.*, ed. T. Bernold. Zürich, Apr 1985, pp 257-266.

Societies and Awards

ΦΒΚ. Honor Society ΦΚΦ. Nat'l Physics Honor Society ΣΠΣ. At Purdue: King Memorial Award for Physics (76, 77); Golomb/Putnam Mathematics Prize (76). American Association for Artificial Intelligence. American Physical Society.

Personal Data

Single. Born in LaPorte, Indiana, 1955. Height 173cm, mass 77kg. Fluent in English & French; passable in classical Latin; learning Scottish Gaelic. 8 years as religious history instructor. Recreational interests include Celtic music, science fiction, Chinese food, fine chocolate, technical history.

References available on request.