

# Curriculum Vitae

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## Employment

- 2005 - present, Associate Professor of Computer Science and Software Engineering with tenure, Rose-Hulman Institute of Technology, Terre Haute, IN, USA.
- 1999 - 2005, Assistant Professor of Computer Science and Software Engineering, Rose-Hulman Institute of Technology, Terre Haute, IN, USA.
- 1995 - 1999, Visiting Assistant Professor of Computer Science, Siena College, Loudonville, NY, USA.

## Education

- 1990 - 1998, Indiana University, Bloomington, Computer Science, Philosophy Minor, **Ph.D.**
- 1988 - 1990, George Mason University
- 1987 - 1988, Indiana University, Bloomington, Computer Science, **MS**
- 1983 - 1987, Universität Hamburg, Computer Science, Economics and Business minor, **Vordiplom**

## Publications

### Refereed:

- Michael Wollowski, JP Verkamp. *Effects of Game Tournaments on Learning and Classroom Climate*. in: Proceedings of the 23rd International FLAIRS Conference, Daytona Beach, FL, pp TBD.
- Cary Laxer, Mats Daniels, Asa Cajander, Michael Wollowski. *Evolution of an International Collaborative Student Project*. in: Proceedings of the ACE 2009 Conference, Wellington, New Zealand, pp 111-118. This paper received a “Best Paper” award.
- Michael Wollowski. *From Foundations to Current Work in a One Quarter Course on Artificial Intelligence*. in: Proceedings of the 21st International FLAIRS Conference, Coconut Grove, FL, pp 245-249.

- Michael Wollowski. *A Theorem Prover for a Diagrammatic Blocks World.* in: Proceedings of the 2006 Midwest Artificial Intelligence and Cognitive Science Conference, Valparaiso, IN, 2006, pp 43-47.
- Michael Wollowski. *Search and Inference with Diagrams* in: Proceedings of The Ninth IASTED International Conference on Internet and Multimedia Systems and Applications, Honolulu, HI, 2005, paper 147-141.
- Michael Wollowski. *Living in a Transparent Future: Search in a Wired World.* in: Proceedings of the World Wide Web @ 10 Conference, Terre Haute, IN, 2004, <http://www10.cs.rose-hulman.edu/Papers/Wollowski.pdf>.
- Michael Wollowski, Peter Nei, Chris Barrell. *A Diagrammatic Inference System for the Web.* in: Proceedings of The Thirteenth International World Wide Web Conference, Alternate Track Papers and Posters, New York, 2004, pp 374-375.
- Michael Wollowski. *An XML-Based Syllabus Editor and Search Engine.* in: Proceedings of the Stop Surfing - Start Teaching 2003 National Conference, Las Vegas, 2003, pp 107-111.
- Lawrence Goldberg, Eric Jolly, J.P. Mellor, Babette Moeller, Madeleine Rothberg, Richard Stamper, Michael Wollowski. *Teaching Diversity Through Inclusive Design Case Studies.* in: Proceedings of the FIE 2002 Conference. Boston, 2002, p S1C-15.
- Michael Wollowski. *XML Based Course Websites.* in: Proceedings of the E-Learn 2002 Conference, Montreal, 2002, pp 1043 - 1048.
- Michael Wollowski. *An Undergraduate Research Course Aimed at Furthering the Web.* in: Proceedings of the 2001 Frontiers in Education Conference, October 2001.
- Scott Vandenberg and Michael Wollowski. *Introducing Computer Science Using A Breadth-First Approach and Functional Programming.* in: Proceedings of the ACM SIGCSE 2000 Technical Conference, March 2000.
- Scott Vandenberg and Michael Wollowski. *Software Support For Introducing Computer Science.* in: Proceedings of the 1999 Computers on Campus Conference, November 1999.
- Michael Wollowski and Eric Hammer. *Heterogeneous Systems for Modeling Dynamic Worlds.* in: *Dynamic Worlds - From the Frame Problem to Knowledge Management*, edited by Remo Pareschi and Bertram Fronhöfer, Kluwer Academic Publishers, February 1999.
- Phillip Bradford and Michael Wollowski. *A Formalization of the Turing Test.* in: SIGART Bulletin, Vol. 6, No. 4, October 1995.
- Michael Wollowski. *Case-Based Reasoning as a Means to Overcome the Frame Problem.* in: Proceedings of the Seventh Florida Artificial Intelligence Research Symposium, 1994.
- Phillip Bradford and Michael Wollowski. *A Formalization of the Turing Test. (extended abstract)* in: Proceedings of the Fifth Midwest Artificial Intelligence and Cognitive Science Conference, Editor: T.E. Ahlswede, 1993.
- Michael Wollowski. *A Scheme for an Integrated Learning System.* in: Proceedings of the Sixth International Workshop on Machine Learning, Editor: A.M. Segre, Morgan Kaufmann Publishers, San Mateo, CA, 1989.

Not refereed:

- Michael Wollowski. Review of: "Pitfalls of OWL-S: a practical semantic Web use case" by Balzer S., Liebig T., Wagner M. in: Proceedings of the 2nd International Conference on Service Oriented Computing, New York, NY, USA, Nov 15-19, 2004. Review published on Feb 17, 2005; in: [reviews.com](http://reviews.com).

- Michael Wollowski. Review of “Modeling and clustering of photo capture streams” by Gargi U. in: Proceedings of the 5th ACM SIGMM International Workshop on Multimedia Information Retrieval, Berkeley, California, Nov 7, 2003:47-54, 2003. Review published on Sep 30 2004 at reviews.com.
- Michael Wollowski. Review of “Triantafillou, Pomportsis, and Demetriadis. The Design and the Formative Evaluation of an Adaptive Educational System Based on Cognitive Styles.” Review published on December 1, 2003, in: <http://www.reviews.com>.
- Michael Wollowski. Review of “Information technology in construction: how to realise the benefits?” Koskela L., Kazi A. In Socio-technical and human cognition elements of information systems Idea Group Publishing, Hershey, PA, 2003. ACM Computing Reviews, October 2003, p 668.
- Phillip Bradford and Michael Wollowski. *A Formalization of the Turing Test*. Techreport No. 399, Indiana University 1994.
- Michael Wollowski. *Learning ICI-Rules through Reporting Differences*. Reports of the Machine Learning and Inference Laboratory, MLI 90-3, School of Information Technology and Engineering, George Mason University, Fairfax, VA, January 1990.

## Presentations

- Am scheduled to present the paper: *Effects of Game Tournaments on Learning and Classroom Climate*. at the 23rd International FLAIRS Conference, Daytona Beach, FL, 2010.
- Presented the paper: *From Foundations to Current Work in a One Quarter Course on Artificial Intelligence*. at the 21st International FLAIRS Conference, Coconut Grove, FL, 2008.
- Presented the paper: *A Theorem Prover for a Diagrammatic Blocks World*. at the 2006 Midwest Artificial Intelligence and Cognitive Science Conference, Valparaiso, IN, 2006.
- Presented the paper: *Search and Inference with Diagrams* at the Ninth IASTED International Conference on Internet and Multimedia Systems and Applications, Honolulu, HI, 2005.
- Presented the paper: *Living in a Transparent Future: Search in a Wired World*. at the World Wide Web @ 10 Conference, Terre Haute, IN, October 2004.
- Presented the poster: *A Diagrammatic Inference System for the Web* at the Thirteenth International World Wide Web Conference, New York City, May 2004.
- Winter 2003/4: Gave a presentation in Julia William’s workshop on *Communication Assignments for Technical Courses*. which was held in the Quality of Education Workshop series at Rose-Hulman Institute of Technology.
- Robert Signorelli and myself gave a presentation of our work entitled *Towards a General-Purpose Search Engine* at the 2003 Search Engine Meeting, Boston, April 2003.
- Presented the paper: *An XML-Based Syllabus Editor and Search Engine* at the Stop Surfing - Start Teaching 2003 National Conference in Las Vegas, February 2003.
- Presented the paper: *XML Based Course Websites* at the E-Learn 2002 conference in Montreal, October 2002.
- Spring 2001/2: Held a workshop *Creating Effective Web Pages* for staff and faculty as part of the Quality of Education Workshop series at Rose-Hulman Institute of Technology.
- Spring 2001/2: Held a workshop *Web Design* for students as part of the New Residence Hall Lecture Series at Rose-Hulman Institute of Technology.

Presented the paper: *An Undergraduate Research Course Aimed at Furthering the Web* at the 2001 Frontiers in Education Conference, Reno, NV, October 2001.

Together with Scott Vandenberg, presented the paper: *Introducing Computer Science Using A Breadth-First Approach and Functional Programming* at the ACM SIGCSE 2000 Technical Conference in Austin, TX, March 2000.

Invited presentation for the “Beat the Winter Blues” series of the Learning Center at Rose-Hulman Institute of Technology entitled: *My first Web-page*, January 2000.

Invited workshop. Title: *Building my first Web-page*. This was a follow-up on the presentation listed subsequently, January 2000.

Together with Scott Vandenberg, presented the paper: *Software Support For Introducing Computer Science* at the 1999 Computers on Campus Conference in Columbia, SC, November 1999.

Invited presentation to the Siena College Family Business Institute. Topic: *The World-Wide Web as a Business Tool*, March 1997.

Invited presentation to the Philosophy student club at Siena College. Topic: *Honest Politicians and Artificial Intelligence*, November 1996.

Presented the paper: *Case-Based Reasoning as a Means to Overcome the Frame Problem* at the Seventh Florida Artificial Intelligence Research Symposium, Pensacola Beach, FL, 1994.

Together with Phillip Bradford, presented the paper: *A Formalization of the Turing Test* at the Fifth Midwest Artificial Intelligence and Cognitive Science Conference, Chesterton, IN 1993.

Presented the paper: *A Scheme for an Integrated Learning System* at the Sixth International Workshop on Machine Learning, Ithaca, NY, 1989.

Presentation of a poster entitled *Reasoning with Diagrams* at the 1993 Student Poster Competition of the ACM Computer Science Conference, Indianapolis, IN.

## Creative Work

Michael Wollowski, Robert Signorelli, and Chris Barrell. Development of the following invention: *A Method and System for User Initiated Repeat Purchases via the Internet*. Publication of invention on the IP.com Prior Art Database (IPCOM000030927D), September 1, 2004.

## Research Activities

Senior theses supervised:

- (2010/11) David McGinnis: A Generalized System for Time Signature Detection.
- (2009/10) Ben Campbell: Hands Free Cursor Control using the Emotic EPOC.
- (2009/10) JP Verkamp: Augmenting n-gram Based Authorship Attribution With Neural Networks. Thesis contributed to him winning the departmental Frank Young Scholarship Award.
- (2007/8) Adam Outcalt: Cryptanalysis with Artificial Intelligence. Thesis contributed to him winning the departmental Frank Young Scholarship Award.
- (2005/6) Eric Holk: Swarm Intelligent Peer-to-Peer Web Search.
- (2005/6) Aaron Knox: Negotiation Simulation in an Adaptive Multiagent System.

- (2004/5) Perry Evans: RNA Secondary Structure Prediction - A Swarm Intelligence Approach. Thesis won the departmental Michael Atkins Outstanding Senior Thesis award.
- (2003/4) Alex Kutsenok: Swarm AI: A Solution to Soccer. Thesis contributed to him winning the departmental Frank Young Scholarship Award.
- (2002/3) Robert Signorelli: Towards a General Purpose XML Search Engine. Thesis earned the departmental Doc Criss Outstanding Senior Project award, which that year was given to the best thesis instead of the best project.

Independent studies courses supervised:

- Spring 2003, Alex Kutsenav: *Philosophy of Artificial Intelligence*.
- Spring 2002, Chris Barell and Peter Nei: *Diagrammatic XML Inference Engine*.
- Spring 2002, Robert Signorelli: *General Purpose XML Search Engine*.
- Spring 2001, Tony Bye: *Emergent Intelligent Behavior*.
- Spring 2000, Andy Engle: *Wireless Communication and Control*.
- Spring 1999, Craig Pohlman: *Web Based Soda Machine*.
- Fall 1998, Christopher Hart and Adam Madkour: *Automated Protein Structure Classification and Backbone Prediction*. [This work was presented at the 5th Annual Hudson River Undergraduate Mathematics Conference, held at Union College on April 18, 1998.]
- Spring and Summer 1998: Frank Traina: *Summarizing Web-page Contents*. [This work was presented at the Fifth Annual Hudson River Undergraduate Mathematic Conference, held at Union College on April 18, 1998.]
- Spring 1997: Brian Chu, Andrew Lippitt, and James Manico: *Future of the World-Wide Web*. [This work was presented at the Fourth Annual Hudson River Undergraduate Mathematic Conference, held at Williams College on April 12, 1997.]
- Spring 1996: James Manico: *Introductory AI with PROLOG*. [This work was presented at the Third Annual Hudson River Undergraduate Mathematic Conference, held at Skidmore College on April 20, 1996.]

summer 2005: Co-wrote a Small Business Innovation Research (SBIR) grant proposal related to the automation of electronic health records. SBIR grants are administered by the Department of Energy.

(spring/summer 2004): Member of masters thesis advisory committee Thomas Mackel, Electrical Engineering.

2000-2003: Co-wrote an NSF grant proposal on Inclusive Design. This grant was aimed at developing case studies for classroom use. The case studies are designed to sensitize students to the needs of people with different abilities. This grant was written in cooperation with WGBH (Boston), the Education Development Center (NYC) and members of the Computer Science and Mechanical Engineering Departments here at RHIT. The grant was funded. We began the research on it and held one meeting in Boston. We developed a questionnaire to interview designers of talking Automated Teller Machines. We interviewed designers, users, and managers involved in developing, using, and making decisions about talking ATMs, so as to build a case study to be used in select courses here at Rose. We published and presented a research summary (see above) and started work on the paper.

Spring 2001: Supervised a student project to integrate informational web-services from several sites of the Rose-Hulman Institute of Technology web-site into one. In the process of developing the system, we raised and addressed several privacy issues. The system is currently being adapted by the Technical Services Center of RHIT into a production site.

Spring 2000: Supervised a student project to wire a soda machine to the internet, enabling soda purchase through a dedicated web-site. This project received wide-spread newspaper coverage in the mid-west and was covered as far away as Myrtle Beach, SC and Phoenix, AZ. It was mentioned in the 2001 US News and World Report College Guide. The project also received local TV coverage.

Reviewer, *Theory Track of the 1999 IEEE Visual Languages Workshop*, September 13-16, Tokyo, Japan.

Discussed a paper at the *1998 AAAI Fall Symposium on Diagrammatic Reasoning II*, October 23-25, Orlando, Florida.

Spring 1998: Co-taught a topics course on “Intelligent Systems” in which students worked on cutting edge research projects. It was a pleasure to see their excitement when communicating with researchers at the forefront of their fields. Several of our students presented their work at the Fifth Annual Hudson River Undergraduate Mathematic Conference, held at Union College on April 18, 1998. This was the first ever topics course at the Computer Science Department at Siena College.

Spring 1997: Together with a colleague: Wrote a grant pre-proposal for building a system that judges written student responses to essays.

April 1996: Chaired a session of the *Hudson River Undergraduate Mathematics Conference* held at Skidmore College.

August 1992 to August 1995: Member of the interdisciplinary Visual Inference Lab at Indiana University, Jon Barwise, Director.

January 1989 to December 1989: Research assistant to Ryszard Michalski and member, Artificial Intelligence Center at George Mason University, Ryszard Michalski, Director.

## Professional Experience

August 1988 - December 1989: Participated in a project to design and implement an expert system for Agroforestry. This was a joint project between George Mason University and the University of Florida, conducted by researchers from the departments of Decision Sciences, Agroforestry, and Computer Science.

May 85 - June 87: Assistant operator in the super computing center of the *Max Planck Institute for Meteorology*, Germany. Duties included the scheduling of jobs on a CDC Cyber 205 supercomputer and operating and maintaining various storage and output devices.

May 1983 - September 1983: Sample Institute for Market Research, Germany. After doing an excellent job stuffing envelopes, was promoted to generating reports summarizing the results of questionnaires. This included writing programs in a statistical programming language.

## Professional Service

2003 - present: Reviewer for *Computing Reviews*

2004 - present: Member of editorial board of the *Journal of Interactive Learning Research*, published by the Association for Advancement of Computing in Education.

## Membership in Professional Organizations

Association for Computing Machinery (ACM)

ACM Special Interest Group on Artificial Intelligence

American Association for Artificial Intelligence (AAAI)

## Teaching Experience

**Fall 2005 to present: Associate Professor of Computer Science and Software Engineering with tenure in the Computer Science and Software Engineering Department at Rose-Hulman Institute of Technology.**

**Fall 1999 to Spring 2005: Assistant Professor of Computer Science and Software Engineering in the Computer Science and Software Engineering Department at Rose-Hulman Institute of Technology.**

The teaching load is 12 credit hours every quarter. I am teaching a fair variety of courses. Developed, reorganized, and coordinated several courses. Several students did independent studies and senior theses with me. Was instrumental in starting the use of the web for course delivery and in expanding the departmental web-site.

Courses taught:

- Introduction to Programming and Problem Solving
- Algorithms and Program Design
- Fundamentals of Software Development I
- Fundamentals of Software Development II
- Fundamentals of Software Development III
- Fundamentals of Software Development, Honors
- Datastructures
- Datastructures and Algorithm Analysis
- Operating Systems
- Programming Language Concepts
- Artificial Intelligence
- Theory of Computation
- Special topics course on the following subjects: Web-based Information Systems, Swarm Intelligence

Developed the following courses:

- Fundamentals of Software Development II (together with David Mutchler)
- Fundamentals of Software Development, Honors
- Web-based Information Systems
- Swarm Intelligence
- The Semantic Web

- Mathematical Logic

Significantly revised the following courses:

- Introduction to Programming and Problem Solving
- Fundamentals of Software Development III
- Artificial Intelligence

Developed initial web-sites for all the courses I taught and continued to improve them. Our course web-sites typically contain course materials, lab materials, electronic gradebook, and class newsgroup.

Together with two colleagues, designed our new introductory course sequence: *Fundamentals of Software Development I, II, and III*.

Coordinated the course *Introduction to Programming and Problem Solving* for one year. Duties included: Organizing meetings with fellow instructors, updating and maintaining the course web-site.

Provided a secure and confidential online gradebook for my department.

**Fall 1995 to Summer 1999: Visiting Assistant Professor of Computer Science in the Computer Science Department at Siena College.**

The teaching load is 12 credit hours every semester. Taught a wide variety of courses. Proposed, developed, and coordinated several courses. Several students did independent studies with me and presented their work at conferences. Was instrumental in developing the departments first web-site.

Courses taught:

- Introduction to Computer Applications
- Introduction to Computer Science (using Scheme)
- Datastructures
- Computer Architecture
- Programming Languages
- Analysis of Algorithms
- Introduction to Artificial Intelligence
- Special topics course on the following subjects: Intelligent Systems; Web-site design and management

Developed the following courses:

- Introduction to Computer Science (together with Scott Vandenberg)
- Intelligent Systems (together with Jim Nolan)
- Web-site design and management

Spring and summer 1996: Participated in writing a proposal for changing the curriculum of the Computer Science Department at Siena College. Proposed a new introductory course as well as an upper level topics course. Spearheaded the drive for the new introductory course, in particular, the use of Scheme. Researched other institutions to determine programming languages and books used in introductory Computer Science courses. Researched and presented sample course outline. Together with Scott Vandenberg, developed the new introductory course: *Introduction to Computer Science*. Among others, we developed the rather elaborate lab materials from scratch.

For a year and a half, I coordinated the course *Introduction to Computer Applications*. Among others, updated the lab materials, created lab practicals, and coordinated the contents and interaction between the lectures and labs.

On a regular basis, students took independent study courses with me. The vast majority of them presented their work at various Annual Hudson River Undergraduate Mathematic Conferences.

### **Spring 1990 to Summer 1995: Associate Instructor in the Computer Science Department at Indiana University, Bloomington.**

For two semesters, taught and had full responsibilities for the course *Introduction to Pascal*. For one semester, taught and full responsibilities for the course *Introduction to C*. For three semesters, was the head associate instructor for the course *Introduction to Computers and Programming using Pascal*. Among others, developed lab materials, theoretical and practical exams, as well as teaching outlines for lab instructors. During two summers, lead discussion sections for the course *Mathematical Foundations of Computer Science*.

## **Academic Service**

Academic year 2000/1: Chaired the *Technology Enhanced Instruction Team*, appointed by the Dean of Faculty. This team was charged with investigating and recommending directions that Rose-Hulman Institute of Technology might employ and support in the areas of web-based instruction, technology in the classroom, and in general any other technology that might enhance our ability to provide the best learning experience possible. This was a very active team in which all members were very interested in pursuing the charge given to us. We surveyed student and faculty opinions on the issues and debated them. We wrote a report of our recommendations and presented them during a faculty meeting. The major recommendations of the report have since been implemented.

Academic years 2000-2004: Served on the Quality of Education committee. From the second year on, this has been a very active committee, as we were charged with determining a course of action to bring the Center for Excellence in Education (CEE) to fruition. I served on a sub-committee which discussed a plan of action. We organized a series of presentations related to teaching. Recently, it was announced that Rose-Hulman Institute of Technology will apply for a Lilly grant in order to move forward with the implementation of the CEE. Part of the reason that this decision was made must undoubtedly be the success of the Quality of Education workshops that we organized. Another charge to the Quality of Education committee was to review the course evaluation forms. We spent a lot of time and energy on surveying the appropriate constituents and to debate the feedback received. The outcome was very positive as the faculty voted to adopt the proposed new course evaluation forms.

1999-2003: Member of the departmental hiring committee.

2001-present: Member of the board of Engenious Solutions, a student-run company which aims to commercialize and market the intellectual property of students, professors, and staff members of Rose-Hulman Institute of Technology as well as outside inventors.

Academic year 2002/3: Served on the departmental Mathematics sub-committee. We studied current and perceived needs of the Mathematics requirements for the Computer Science B.S. degree.

Academic year 2002/3: Served on the departmental sub-committee for the introductory course sequence: CSSE 120, CSSE 220, and CSSE 230. We developed detailed course objectives for those courses.

Academic year 2000/1: Served on a committee chaired by the director of publications to review the structure and design of the Rose-Hulman web-site.

2000-present: Academic advisor to about 20 students. On a regular basis, I advise non-majors who happen to be in courses I teach on issues related to applying and attending graduate school.

Academic years 2000-2002: Supervised departmental student workers who are revising our departmental web-site. Gathered input from department and participated in the design of the new web-site.

Academic years 2000-2002: Held laptop orientation sessions.

Summer 1998: Developed a web-site for the *Siena College Research Institute*.

Fall 1997 to Spring 1999: Academic advisor for 20+ students

October 19, 1996: Assisted in running the Northeast, Central preliminaries of the ACM College Programming Contest held at Siena College. Was in charge of the problem set; assisted in judging the programs.

since Fall 1996: Co-organizer of the Siena College Happy Hours for Faculty, Staff, and Administrators.

Summer 1996 - Summer 1999: Shared system administrator duties with a colleague for our two departmental Unix machines. Was involved in developing a plan to obtain our first departmental UNIX machine.

Summer 1996 - Summer 1999: Installed the web server of the Computer Science Department of Siena College. Was the webmaster for the web site. Designed webpages for our department.

Spring 1996: Helped judge a local high school programming contest held at the Computer Science Department of Siena College.

August 1991 - May 1992: Was in charge of administrative tasks of the Mind, Artificial Intelligence, and Computation Colloquium series at the Computer Science Department of Indiana University.

August 1988 - December 1989: Was in charge of administrative tasks of the colloquia of the Center for Artificial Intelligence at the Computer Science Department of George Mason University. Assisted in producing a brochure advertising the center.