

Nathaniel G. Martin

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Objective

Transform the teaching of Computer Science and Programming to meet the needs of the era of Agile Development.

Highlights

Ph.D. Computer Science
9+ Years Teaching Experience
2 Years Director of the Undergraduate Program at the University of Rochester
10+ Years Ethnographic Experience
30+ Years Experience in Software Development
10+ Years Management Experience
15+ Years Software Architecture Experience
15+ Years Industry Experience
DfLSS Green Belt Certification (Software and Systems Engineering)

Education

Ph.D. Computer Science, University of Rochester Ph.D. (1993), Rochester, New York
MS Computer Science, University of Florida (1984), Gainesville, Florida
BA Literature, New College of the University of South Florida (1977), Sarasota, Florida

Experience

2013-Present: Computer Science Faculty, Various Colleges and Universities

Manav Rachna University, Faridabad, Haryana, India: *Taught Structured Programming*. Provided Faculty Development Seminar.

University of Rochester, Rochester, NY, USA: Taught *Web Programming*.

College of Engineering, Pune, Maharashtra, India: Taught *Human Computer Interface* and *Post-Graduate Lab*. Supervised student research. Provided Faculty Development Seminar.

2010-2013: *Systems Engineer Xerox Corporation*

Systems Engineer: Guided offshore team to first on-time delivery after months of missed delivery dates. Instituted cultural change at Indian company through three months *in situ* work to achieve integration with Xerox processes.

Project Leadership: Lead team of offshore engineers in developing next generation digital controller. Guided four new Xerox Systems Engineers through initial work with company.

2002-2010: *Researcher Xerox Corporation*.

Work Practice Researcher: Studied work practices surrounding paper, office of the future, custom publishing, scanning use and documentation in rental business, Break/Fix service in manufacturing firm, book processing in libraries, mortgage office in credit union. Influenced direction of research and development in business groups and corporate research.

Data Mining Researcher: Developed algorithms, software and systems for text and data mining. Designed and implemented a novel technique for data mining based on work practice study of engineers. Designed and implemented a web based system for visualizing temporal data.

Project Leadership: Work Practice Studies of uses of paper, office of the future, custom publishing, scanning use in rental business, Break/Fix service in manufacturing firm

1998-2002: *Software Architect Xerox Corporation.* Responsible for developing reference models, software architecture, technical strategy, enterprise coherence and work practice studies.

Software Architecture: Wrote first reference model approved for corporate user. Developed process for creating of corporate reference models. Developed corporate technical strategy for printer controllers as member of team that developed the first corporate architecture for printer controllers. Achieved agreement on appropriate strategy for integrating competing front ends for print shops. Developed strategy for front end to production printing solutions.

Project Leadership: Lead Output Predictability TRT; all deliverables produced on time. Lead Technical Elements Definition Team; all deliverables produced on time.

Management: Managed Content Team, four senior individual contributors responsible for development of all enterprise coherence technical artifacts. Excellent scores on Employee Motivation and Satisfaction survey.

1992-1998: *Instructor/Scientist University of Rochester.* Responsible for Computer Science Major, and research in computer based planning.

Teaching: Taught upwards of three hundred students a semester. Supervised the teaching of between four and six other instructors. Designed and developed computer aided educational technology. More than doubled enrollment in all classes taught. Handled increased enrollment through Web courses.

Administration: Helped develop proposal for Computer Science BS and BA; approved 1995. Administered Computer Science undergraduate program 1995-1998.

Research: Designed and implemented a graphical simulator that runs on a network of SPARC stations. Supervised and integrated programs written by another programmer.

Grant Support: Microsoft Software Grant. Subcontract P.I. on ARPA/Rome Labs Grant to aid in construction of Air Campaign Simulator. Responsible for fiscal management of subcontract. Assisted in writing grants for support of TRAINS planning system.

Outside Experience: Served as adjunct professor at Monroe Community College and RIT. Attended Workshop on Distance Learning and Workshop on Peer Learning in Computer Science Curriculum.

1987-1992: *Research/Teaching Assistant University of Rochester.* Responsible for research in planning and lab instruction.

Teaching: Teaching assistant for Lisp Programming and Artificial Intelligence.

Armtrak: Built a system that integrated visual input and digital control of toy trains. Wrote an extensive simulation of the toy trains system.

Trains-92: Integrated software produced by eight professors and graduate students in multiple versions of Lisp on multiple platforms. Wrote client/server system using TCP/IP to integrate multiple platforms.

Trains Executor: Defined and implemented a language that supports the combination of logic programming and machine learning. Used this language to build the Trains Executor, which uses past experience to improve future performance.

1984-1987: *Contract Programmer Gainesville, Florida.* Worked with various departments at the University of Florida overseeing implementations of computer systems for instruction and research.

Department of Psychology, University of Florida: Directed purchase of hardware and software. Integrated systems and instructed users.

Department of Electrical Engineering, University of Florida: Integrated Hewlett Packard computers controlling circuit testing hardware with a AT&T 3B/2 running Unix. Department of Neurology, University of Florida: Wrote software for a experimental hardware integrating custom digital hardware, A/D data conversion, and eye tracking hardware.

General Imaging: Extended large existing system that displays X-ray images digitally produced.

Publications

Refereed Publications

Nathaniel G. Martin and Pradeep Waychal. "IT Education and Team Based Learning." ICTIEE 2014 (2014).

- Nathaniel G. Martin and Patricia Wall. "Behind the scenes: the business side of medical records," In *"Making Work Visible: Ethnographically Grounded Case Studied of Work Practice,"* (Cambridge University Press, 2011)
- Mary Ann Sprague, Nathaniel G. Martin, and Hans Koomen. "New ways of working: the technical and cultural implications of work practice transition," In *"Making Work Visible: Ethnographically Grounded Case Studied of Work Practice,"* (Cambridge University Press, 2011)
- Nathaniel G. Martin, Paul Austin, Patricia Wall. "Going Electronic: A Clinics Transition of Electronic Health Records," (3rd XIG Research and Technology Conference, April 27-29 2010)
- Nathaniel G. Martin and Patricia Wall. "The secret life of medical records: A study of medical records and the people who manage them," In *EPIC 2008 Conference Proceedings*, (October 2008, Copenhagen, Denmark)
- Nathaniel G. Martin, Mary Ann Sprague, Patricia Swenton-Wall, and Jennifer Watts-Perotti. "Giving voice to print shop workers: Prerenting actual work practices in the streamlining of a labor intensive production print job," In *EPIC 2007 Conference Proceedings*, (October 2007, Keystone CO USA)
- Li Wei, John Handley, Nathaniel Martin, Tong Sun, Eamonn Keogh. "Clustering Workflow Requirements Using Compression Dissimilarity Measure," In *Proc. of Ontology Mining and Knowledge Discovery from Semistructured Documents Workshop at IEEE/WIC/ACM ICDM* (MDS 2006)
- Nathaniel G. Martin. "Work Practice in Research: A Case Study", *INCOSE*, Rochester, NY, 2005
- Lesh, Neil, Nathaniel G. Martin and James Allen, "Improving Big Plans," *AAAI/IAAI*, 860-867, 1998.
- Traum, D.R., L.K. Schubert, M. Poesio, N.G. Martin, M.N. Light, C.H. Hwang, P.A. Heeman, G.M. Ferguson, and J.F. Allen. Knowledge representation in the TRAINS-93 conversation systems. In *Int'l. J. Expert Systems*, 9:1, 173-223, 1996.
- Allen, J.R., L.K. Schubert, G.M. Ferguson, P.A. Heeman, C.H. Hwang, T. Kato, M.N. Light, N.G. Martin, B.W. Miller, M. Poesio, and D.R. Traum. The TRAINS project: A case study in defining a conversational planning agent. In *J. Experimental and Theoretical AI*, 7, 7-48, 1995
- Poesio, M., G.M. Ferguson, P.A. Heeman, C.H. Hwang, D.R. Traum, J.F. Allen, N.G. Martin, and L.K. Schubert. Knowledge representation in the TRAINS system," In *AAAI 1994 Fall Symp. on Knowledge Representation for Natural Language Processing in Implemented Systems*, 1994
- Nathaniel G. Martin and James F. Allen. A Decision Theoretic Planning Assistant. In *Proceedings of the Workshop on Decision Theoretic Planning AAI Spring Symposium*, 1994.
- Nathaniel G. Martin and James F. Allen. A language for planning with statistics. In *Proceedings of the Seventh Conference on Uncertainty in Artificial Intelligence*, 1991.
- Nathaniel G. Martin and James F. Allen. Combining reactive and strategic planning through decomposition abstraction. In *Proceeding of the DARPA Workshop on Innovative Approaches to Planning, Scheduling and Control*, 1990.
- Nathaniel G. Martin and James F. Allen. Abstraction in planning: A probabilistic approach. Presented at *the AAI Workshop on Automatic Generation of Approximations and Abstractions*, 1990.
- Nathaniel G. Martin, Shamkant B. Navathe, and Rafi Ahmed. Schema anomalies in history databases. In *Proc. Conf. on Very Large Databases*, 1987.

Patents

- Nathaniel G. Martin, "Delayed review of scanned documents using unique identification marking on scanned documents," US Patent 8,867,048, (USPTO 2014)
- Nathaniel G. Martin and Paul R. Austin, "System and method for processing a prescription," US Patent 8,694,332, (USPTO 2014)
- Nathaniel G. Martin and Wendell L. Kibler, "Method of providing visual access to comment markings," US Patent 8,661,331 (USPTO 2014)
- Nathaniel G. Martin, "Automatic recognition of document scan error," US Patent 8,564,856, (USPTO 2013)
- Paul R. Austin and Nathaniel G. Martin, "Printing system with improved scanning functionality," US Patent 8,305,653, (USPTO 2012)
- Paul R. Austin and Nathaniel G. Martin, "Printing system with improved scanning functionality," (USPTO 2012)
- Nathaniel G. Martin and Hua Liu, "Economic model for printing with a peer network of printing devices," US Patent 8,270,012, (USPTO 2012)
- Nathaniel G. Martin and Robert St. Jacques, Jr, Nathaniel G. Martin, and Kevin M. Hall, "Securing printed output," US Patent 8,156,416 (USPTO 2012)
- Nathaniel G. Martin, "Text searching and categorization tool," US Patent 7,996,356 (USPTO 2011)
- Nathaniel G. Martin, Naveen Sharma, Michael P. Kehoe, and Robert St. Jacques, Jr., "Paper interface to an electronic record system," US Patent 7,936,925 (USPTO, 2011)

Nathaniel G. Martin and John C. Handley, "Method and service for processing an electronic workflow," US Patent 7,907,299, (USPTO 2011)

Wei Li, John C. Handley and Nathaniel G. Martin. "System and Method for clustering, categorizing and selecting documents," US Patent 7,567,960 (USPTO, 2009)

Nathaniel G. Martin, Paul R. Austin, William K. Stumbo, and Wendell L. Kibler. "Pull model network image scanning system," US Patent 7,567,364 (USPTO, 2009)

William K. Stumbo, Nathaniel G. Martin, and David Tilley. "Method and system for sending material," US Patent 7,483,179 (USPTO, 2009)

Nathaniel G. Martin. "Card with rewritable display," US Patent 7,284,708 (USPTO, 2007)

Anne H. Stimson, Nathaniel G. Martin, and Mary Ann Sprague, "Menu Sign system," US Patent 7,239,249 (USPTO, 2007)

Other Publications

Martin, N.G. "Using Scrum in the Classroom," Keynote address at the *Indian Association of Positive Psychology*, 2015.

Martin, N.G. "Incorporating Subject Matter Expertise into Text Mining," Presented at *The First Xerox innovation Group Conference*, 2006.

Martin, N.G. "On-Demand Book Publishing: A Model of the Publishing Industry with a focus on the use of On-Demand Printing" Xerox Technical Report, Dec 31, 2003.

Martin, N.G. A Comparison between a Personalized System of Instruction (PSI) and Cooperative Learning in Teaching Computer Literacy. Computer Science TR 677, Computer Science Dept., University of Rochester, In Press. Available at <http://www.cs.rochester.edu/u/martin/psi/paper.html>

Martin, N.G. and G.J. Mitchel. TRAINS world simulator: User's manual. TRAINS TN 95-2, Computer Science Dept., University of Rochester, 1995.

Nathaniel G. Martin. *Applications of Statistical Inference to Planning under Uncertainty*. Ph.D. thesis, University of Rochester, Rochester, NY, 1993.

Nathaniel G. Martin and Bradford Miller. The TRAINS-90 Simulator. TRAINS Technical Note 91-4, University of Rochester, 1991.

Nathaniel G. Martin, James F. Allen, and Christopher Brown. Armtrak: A domain for the unified study of natural language, planning, and active vision. Computer Science TR 324, University of Rochester, 1990.

Christopher Brown, Dana H. Ballard, Timothy G. Becker, Roger F. Gans, Nathaniel G. Martin, Thomas J. Olson, Robert D. Potter, Raymond D. Rimey, David G. Tilley, and Steven D. Whitehead. The Rochester Robot. Computer Science TR 257, University of Rochester, 1988.

Nathaniel G. Martin. *Post's Normalization Theorem: Its Implications for Artificial Intelligence*. Masters thesis, University of Florida, Gainesville, FL, 1984.