

Joan A. Smith

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Education

- 2006 Ph.D. Candidate, Computer Science, Old Dominion University
DISSERTATION: *Integrating Preservation Functions into the Web Server*
Expected completion: Spring 2008
- 1988 M.A. Computer Education, Hampton University
AREA: *Computer-Based-Training Software Development*
- 1987 B.A. Natural Science, University of the State of New York
CONCENTRATION: *Chemistry and Biology*

Research & Teaching

Areas of Research Interest

- Web architectures, digital preservation, lexical signatures, digital libraries, semantic web.

Teaching

- Lecturer, computer science capstone course (CS-410), Fall 2005. Old Dominion University. Adjunct Faculty appointment, 2005 - Present. Lecturer on selected course topics in Information Retrieval (CS-695), Digital Preservation (CS-791), Economics of Information (CS-891), Introduction to Digital Libraries (CS 851), and Mobile Computing (CS-895).
- Instructor, Electronic Institute of Technology, 1987-1989. Instructor for Programming I & II, Databases, and Applications Software.
- Instructor and CBT programmer for Army Education Centers in Hampton Roads, 1985-1987.

Publications

- Joan A. Smith and Michael L. Nelson. "CRATE: A Simple Model For Self-Describing Web Resources." In *7th ACM International Web Archiving Workshop IWAW'07*, Vancouver, BC, Canada, June 2007.
- Joan A. Smith and Michael L. Nelson. "Generating Best-Effort Preservation Metadata For Web Resources At Time Of Dissemination." In *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries JCDL 2007*, Vancouver, BC, Canada, June 2007.
- Frank McCown, Joan A. Smith, Michael L. Nelson, and Johan Bollen. "Reconstructing Websites For The Lazy Webmaster." In *Dynamics of Search Engines: An Introduction*, pages 81–112. 2007 (book chapter).
- Michael L. Nelson, Frank McCown, Joan A. Smith, and Martin Klein. "Using The Web Infrastructure To Preserve Web Pages." *International Journal on Digital Libraries, Special Issue on Digital Preservation*, April 2007.

- Martin Klein, Frank McCown, Joan A. Smith, and Michael L. Nelson. “How Much Preservation Do I Get If I Do Absolutely Nothing? Using The Web Infrastructure For Digital Preservation.” In *Content Engineering: Konzepte, Technologien und Anwendungen in der Medienproduktion*, pages 71–87. GITO-Verlag, Berlin, Germany, 2007.
- Michael L. Nelson, Joan A. Smith, Herbert Van de Sompel, Xiaoming Liu, and Ignacio Garcia del Campo. “Efficient, Automatic Web Resource Harvesting.” In *Proceedings of the 8th ACM International Workshop On Web Information And Data Management (WIDM)*, November 2006.
- Frank McCown, Joan A. Smith, Michael L. Nelson, and Johan Bollen. “Lazy Preservation: Reconstructing Websites For The Lazy Webmaster.” In *Proceedings of the 8th ACM International Workshop On Web Information And Data Management (WIDM)*, November 2006.
- Joan A. Smith, Martin Klein, and Michael L. Nelson. “Repository Replication Using NNTP and SMTP.” *Technical Report*, Old Dominion University, June 2006. Updated November 2006. Full-length report. arXiv cs.DL/0606008.
- Joan A. Smith, Martin Klein, and Michael L. Nelson. “Repository Replication Using NNTP And SMTP.” In *Proceedings of the 10th European Conference on Digital Libraries*, pages 51–62, September 2006.
- Joan A. Smith. “Integrating Preservation Functions Into The Apache Web Server.” *Joint Conference on Digital Libraries: Doctoral Consortium*, June 2006.
- Michael L. Nelson, Joan A. Smith, and Martin Klein. “Repository Replication Using SMTP And NNTP.” In *Proceedings of the 2006 International Conference on Digital Government Research*, pages 436–437, New York, NY, USA, May 2006. ACM Press.
- Joan A. Smith, Frank McCown, and Michael L. Nelson. “Observed Web Robot Behavior On Decaying Web Subsites.” *D-Lib Magazine*, Feb 2006.
- Frank McCown, Joan A. Smith, Michael L. Nelson, and Johan Bollen. “Reconstructing Websites For The Lazy Webmaster.” *Technical Report*, Old Dominion University, December 2005. <http://arxiv.org/pdf/cs.IR/0512069>.
- Johan Bollen, Herbert Van de Sompel, Joan A. Smith, and Rick Luce. “Toward Alternative Metrics Of Journal Impact: A Comparison Of Download And Citation Data.” *Journal of Information Processing & Management*, 41(6):1419–1440, December 2005.
- Johan Bollen, Herbert Van de Sompel, Joan A. Smith, and Rick Luce. “Toward Alternative Metrics Of Journal Impact: A Comparison Of Download And Citation Data.” *Technical Report*, Old Dominion University, March 2005. <http://arxiv.org/pdf/cs.DL/0503007>.

Conference Presentations

- “An Apache Module For Generating Self-Describing Web Resources.” *Alliance for Information Science and Technology Innovation (AISTI)*, East Coast Meeting (invited talk). Norfolk, VA. October 2007.
- “CRATE: A Simple Model For Self-Describing Web Resources.” *ACM 7th International Web Archiving Workshop IAWW’07*, Vancouver, BC, Canada, June 2007.
- “Generating Best-Effort Preservation Metadata For Web Resources At Time Of Dissemination.” *ACM/IEEE Joint Conference on Digital Libraries (JCDL) 2007*, Vancouver, BC, Canada, June 2007.
- “Using OAI-PMH Resource Harvesting & MPEG-21 DIDL For Digital Preservation.” *Open Repositories Conference (OR’07)*. San Antonio, TX. January 2007.

- “Efficient, Automatic Web Harvesting.” *8th ACM International Workshop On Web Information And Data Management*. Arlington, VA. October 2006.
- “Thinking Differently About Web Page Preservation.” *Library of Congress*. Washington, DC. June 2006.
- “Integrating Preservation Functions Into The Web Server.” *ACM/IEEE Joint Conference on Digital Libraries Doctoral Consortium*. Chapel Hill, NC. June 2006.

Academic Honors & Professional Memberships

- CLIR 2004 Zipf Fellow (see <http://www.clir.org/fellowships/zipf/zipfrecips.html>)
- Google Women in Engineering 2005 (competitive, by-invitation-only conference)
- Alpha Gamma Sigma Honor Society (permanent member since 1982)
- Golden Key International Honor Society (permanent member since 2007)
- Old Dominion University Computer Science Department Featured Student, Spring 2005 (see <http://www.cs.odu.edu/joan.shtml>)
- Association of Computing Machinery (ACM; member since 2004)
- Institute of Electrical and Electronics Engineers (IEEE; member since 2005)

Computer Science-Related Service Activities

- Reviewer, ACM Journal on Education Resources in Computing (JERIC).
- System Administrator for the research group’s extensive computing resources
- Webmaster for <http://www.modoi.org/>.
- Capstone course project evaluator (CS 410-411).

Summary of Professional Experience

Techmatics Technologies Inc.

- 1985-1988 CBT Software Developer & System Administrator**
 Designed and developed CBT software on Control Data Corp. mainframes for GED and occupational specialty test preparation. Handled daily system administration of local computer systems and networks, improving system availability and usage by 250% in less than 6 months by revamping terminal use schedules and resolving miscellaneous hardware problems.
- 1985-1988 Instructor**
 Developed and taught courses in basic skills (Math, Reading, English) and CLEP subject areas for adults needing to improve their test scores for promotion and college credit. Provided computer literacy training for both teachers and students.
- 1986-1988 Supervisor**
 Set course design criteria for all Learning Center education programs. Managed Military Occupational Specialty (MOS) Library facilities and services. Interviewed, hired and evaluated instructional and librarian staff. Managed staffing, scheduling, and course offerings at the three Army Learning Centers in Hampton Roads.

Electronic Institute of Technology

1988-1989

Instructor

Designed and taught courses in Programming, Algorithm Development, Databases, and Applications Software. Provided career development training to graduating students preparing to join the workforce.

1988-1989

Software Developer

Designed and developed two major software applications: (1) D-Base/Clipper application to manage student career development information and employment statistics on graduated students and (2) an attendance and grades tracking package to meet student record-keeping requirements defined for institutions receiving Federal grants.

Inter-National Research Institute (INRI)

1989-1991

System Administrator

Designed an intranet linking Macs, PCs, HP-UX and SUN-OS systems across 2 buildings. While today this is a plug-and-play operation, at the time it required knowledge of network wiring (which I did myself), operating systems and compatible hardware components, and how to integrate software products across platforms. Convinced corporate to invest in email, having researched and found a cost-effective solution that could be implemented at all 6 of our sites on the East Coast, West Coast, and Hawaii. Developed the installation strategy and handled the hardware and software purchasing and installation at all of the sites. Again, today this is a very simple task, but in 1989 it was a leading-edge solution freeing us from dependence on fax machines and greatly improving inter-office communications and operations.

1991-1993

Systems Support Department Head

Developed infrastructure to provide world-wide customer support, including staffing schedules and a 24x7 hotline. Designed and developed a software package to track customer support activities and costs. Supervised, trained, and evaluated support staff.

1989-1993

Software Project Manager

Acted as project lead and technical liaison between software engineers and customers for a wide variety of projects on platforms ranging from SUN SOLARIS and HP-UX to Microsoft Windows operating systems. Wrote a WinPAT Navy Budget Analyst software prototype using Oracle, which was later expanded into a major software application. Managed allocation of engineers among multiple projects while keeping delivery schedules on time and within budget. All of the projects earned the highest allowable performance evaluation awards (additional monetary compensation based on federal customer assessment of product cost, quality, and performance).

1994-1998 **Program Manager for Information Systems**
Built a completely new business base of information systems projects for an established command-and-control systems software company. Specified software development plans based on solicitation (RFP) specifications. Wrote contract proposals, supervised design and development of the actual software products, and negotiated with customers for contract funding. Increased awards from simple “Purchase Order” values of less than \$100K to full-fledged competitive contract awards of \$500K annually. Consistently won new proposal bids each year, increasing total annual award values to over \$5 million.

1996-2000 **Director of Engineering**
Provided management and technical leadership to rapidly growing multi-functional engineering staff for e-commerce, database and web application development. Established and led a Software Engineering Process Group to improve overall software quality. Initiated “Brown Bag Lunch Seminars” where lead software engineers presented their projects highlighting both outstanding development issues and significant achievements. Standardized annual evaluation process and established quarterly reviews.

1996-1998 **Branch Manager**
Managed the budget and ensured profitability of the office, which averaged 15 separate, on-going software development projects. Formalized and standardized the staff hiring process. Expanded branch office from an initial staff of 3 programmers to over 40 software engineers, test engineers, systems analysts and documentation staff.

Northrop Grumman

1998-2000 **Information Systems Program Manager**
Wrote and successfully defended technical proposals for dozens of contracts covering applications software development. Worked with other proposal teams at branches worldwide to increase local division business from \$5 million to over \$50 million annually. Developed innovative software prototypes and grew them into well-funded, full-scale projects, many of which became mission-critical applications for our customers.

Blue-I Technology

2000-2002 **Systems Engineer**
Provided systems engineering consulting on US Department of Defense command-and-control systems. Assisted with design and development of software prototypes integrating third-party products with these systems. Provided site support and software demonstrations to client’s customers.

2000-2004 **Automation Engineer**
Designed, developed and installed residential automation systems. Integrated computer-based controller software with residential lighting, whole-house audio, and climate-control systems.

Old Dominion University - Computer Science Dept.

2004-Present Graduate Research Assistant

- Assist with developing research proposals, designing and conducting research experiments, writing technical reports and articles for professional journals.
- Software Developer for web-oriented research experiments examining web crawler behavior, resource persistence in the WWW infrastructure, and digital preservation of web resources.
- Lead Developer of the Apache *mod_oai* module which provides an OAI-PMH-compliant interface to an Apache web server.

2005-Present Adjunct Faculty (Instructor)

- Appointed adjunct faculty in August 2005, renewed 2007. Taught computer science capstone course (CS-410).
- Lectured on specific topics in Information Retrieval (CS-695), Digital Preservation (CS-891), Mobile Computing (CS-895), Introduction to Digital Libraries (CS 851), and Economics of Information (CS-891).

Professional References

- Dr. Michael L. Nelson
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Additional Information

Please see my website at <http://www.joanasmith.com/> for more information.