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Michael L. Nelson

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Professional Preparation

- 2000–2001 **Postdoctoral**, *University of North Carolina, School of Information and Library Science*, Chapel Hill, NC, Advisor: Gary Marchionini.
- 2000 **Ph.D. Computer Science**, *Old Dominion University*, Norfolk, VA, Advisor: Kurt Maly. Dissertation Title: *Buckets: Smart Objects for Digital Libraries*
- 1997 **M.S. Computer Science**, *Old Dominion University*, Norfolk, VA.
- 1991 **B.S. Computer Science**, *Virginia Tech*, Blacksburg, VA.

Appointments

- 2015–present **Professor**, *Old Dominion University*, Norfolk, VA.
- 2008–2015 **Associate Professor**, *Old Dominion University*, Norfolk, VA.
- 2002–2008 **Assistant Professor**, *Old Dominion University*, Norfolk, VA.
- 1991–2002 **Computer Engineer**, *NASA Langley Research Center*, Hampton, VA.
- 2002 **Consultant**, *Institute for Computer Applications in Science and Engineering (ICASE)*, Hampton, VA.
- 2000 **Summer Visiting Researcher**, *Air Force Research Laboratory*, Albuquerque, NM.
- 1999 **Summer Visiting Researcher**, *Air Force Research Laboratory*, Albuquerque, NM.
- 1995–1996 **Principal**, *Unified Research Laboratories*, Hampton, VA.
- 1991 **Systems Programmer**, *Computer Sciences Corporation*, Hampton, VA.

Awards and Recognition

- 2015 **Best Student Paper Award (Lulwah Alkwai)**, *ACM/IEEE JCDL 2015*.
- 2014 **Vannevar Bush Best Paper Award**, *ACM/IEEE JCDL 2014*.
- 2014 **Best Student Paper Award (Justin Brunelle)**, *ACM/IEEE JCDL 2014*.
- 2013 **Best Student Paper Award (Yasmin AlNoamany)**, *TPDL 2013*.
- 2013 **Best Student Paper Finalist (Scott Ainsworth)**, *ACM/IEEE JCDL 2013*.
- 2012 **ODU College of Science Distinguished Research Award**.
- 2012 **ODU College of Science Doctoral Mentoring Award**.
- 2010 **Digital Preservation Coalition (DPC) Digital Preservation Award**, *For Work on Memento*, London UK, December 1 2010.
- 2010 **Microsoft Research Faculty Summit 2010**, *For Work on Memento*, Redmond WA, July 12-13 2010.
- 2010 **O'Reilly Foo Camp**, *For Work on Memento*, Sebastopol CA, June 24-28 2010.
- 2008 **Digital Preservation Pioneer**, *Library of Congress*.
- 2007–2011 **NSF CAREER Award**, *Self-Preserving Digital Objects*.
- 2007 **Invited Participant**, *NSF/JISC Repositories Workshop*, April 17-19, 2007, Phoenix AZ.
- 2004 **Best Poster**, *ACM/IEEE JCDL 2004*.
- 2003 **Vannevar Bush Best Paper Finalist**, *ACM/IEEE JCDL 2003*.
- 2001 **Award for the NACA digital library**, *NASA Langley Research Center*.
- 2000–2001 **Information Technology Fellowship**, *NASA Langley Research Center*.

- 2000 **Award for Research Excellence**, *NASA Langley Research Center*.
 1996 **Best Technical Site for the NASA Technical Report Server**, *Industry.Net*.
 1994 **Team Excellence Award for Internet Fair 1**, *NASA Langley Research Center*.
 1993 **Award for the Langley Technical Report Server**, *NASA Langley Research Center*.

Grants (\$9.1M total, PI on 18 of 26)

- 2016–2019 M. L. Nelson (PI), M. C. Weigle, H. Van de Sompel, “Towards a Web-Centric Approach for Capturing the Scholarly Record”, Andrew Mellon Foundation, \$830,000
 2015–2018 M. L. Nelson (PI), M. C. Weigle, “Increasing the Value of Existing Web Archives”, NSF, \$481,780
 2015–2018 M. L. Nelson (PI), M. C. Weigle, “Combining Social Media Storytelling With Web Archives”, IMLS, \$468,618
 2014–2017 M. C. Weigle (PI), M. L. Nelson, “Archive What I Can See Now: Bringing Institutional Web Archiving Tools to the Individual Researcher”, NEH, \$324,624
 2014–2016 M. L. Nelson, “Web Archive Profiling Via Sampling”, IIPC, \$49,000
 2014 M. L. Nelson (PI), M. C. Weigle, “Tools for Managing Seed URIs”, Andrew Mellon Foundation, \$22,000
 2014 M. C. Weigle (PI), M. L. Nelson, “Visualizing Digital Collections of Web Archives”, Andrew Mellon Foundation, \$22,000
 2013–2014 M. C. Weigle (PI), M. L. Nelson, “Archive What I Can See Now”, NEH, \$57,892
 2013–2014 M. L. Nelson, “Enhanced Memento Support for MediaWiki”, Andrew Mellon Foundation, \$25,000
 2012–2013 M. L. Nelson, “Doctoral Consortium at 2012 ACM/IEEE-CS Joint Conference on Digital Libraries (JCDL 2012)”, NSF, \$15,930
 2012–2013 T. A. Carpenter (PI), M. L. Nelson, C. Lagoze, “A Specification for Resource Synchronization”, Alfred P. Sloan Foundation, \$222,706 (ODU portion is \$28,260)
 2011 M. L. Nelson (PI), M. C. Weigle, K. Gossett, L. Potts, “Identifying and Archiving Culturally Important Conversations in the Social Web”, ODU Research Foundation, \$54,000
 2010–2013 H. Garcia-Molina (PI), M. L. Nelson, F. McCown, “III: Large: Collaborative Research: Web Archive Cooperative”, NSF, \$2,858,601 (ODU portion is \$399,754)
 2010–2012 M. L. Nelson (PI), H. Van de Sompel, “Integrating the Past Web Into the Current Web”, Library of Congress, \$1,000,000 (ODU portion is \$450,000)
 2008 M. L. Nelson, “Client-Side Preservation Techniques for ORE Aggregations”, Andrew Mellon Foundation, \$24,500
 2007–2011 M. L. Nelson, “CAREER: Self-Preserving Digital Objects”, NSF, \$540,754
 2007–2010 M. L. Nelson (PI), H. Van de Sompel, “Tools for a Preservation-Ready Web”, Library of Congress, \$249,941
 2006–2007 M. L. Nelson, “SGER: In Vivo Digital Preservation”, NSF, \$101,895
 2006 M. L. Nelson, “Repository Design and Support for the Library of Congress”, Library of Congress, \$16,156
 2005–2006 M. L. Nelson, “OAI-PMH Repository Analysis for the NASA Langley Research Center Atmospheric Sciences Data Center”, NASA LaRC, \$50,892
 2005–2006 M. L. Nelson (PI), J. Bollen, “Shared Infrastructure Preservation Models”, NSF, \$111,300
 2004–2005 M. L. Nelson (PI), J. Bollen, “Self-Preserving Digital Objects”, Library of Congress, \$109,836
 2004–2005 M. L. Nelson, “mod_oai: Getting OAI for Free”, Andrew Mellon Foundation, \$47,433
 2003–2004 K. Maly (PI), M. Zubair, M. L. Nelson, J. Bollen, “Digital Library Technology/Application Development”, NASA LaRC, \$240,000
 2002–2004 K. Maly (PI), M. Zubair, M. L. Nelson, “Kepler – A Communal Digital Library”, NSF, \$700,000
 2001–2002 K. Maly (PI), M. Zubair, M. L. Nelson, “An OAI-Compliant Federated Physics Digital Library for the NSDL”, NSF, \$479,997

Protocols and Specifications

- [1] Martin Klein, Robert Sanderson, Robert Van de Sompel, Herbert, Simeon Warner, Bernhard Haslhofer, Michael Nelson, and Carl Lagoze. ResourceSync Framework Specification (ANSI/NISO Z39.99-2014). <http://www.openarchives.org/rs/resourcesync>, 2014.
- [2] Herbert Van de Sompel, Michael Nelson, and Robert Sanderson. HTTP framework for time-based access to resource states – Memento, Internet RFC 7089, December 2013.
- [3] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE Specification - Abstract Data Model. <http://www.openarchives.org/ore/datamodel>, 2008.

- [4] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE Specification - Vocabulary. <http://www.openarchives.org/ore/vocabulary>, 2008.
- [5] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE User Guide - Primer. <http://www.openarchives.org/ore/primer>, 2008.
- [6] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE User Guide - Resource Map Implementation in Atom. <http://www.openarchives.org/ore/atom>, 2008.
- [7] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE User Guide - Resource Map Implementation in RDF/XML. <http://www.openarchives.org/ore/rdfxml>, 2008.
- [8] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE User Guide - Resource Map Implementation in RDFa. <http://www.openarchives.org/ore/rdfa>, 2008.
- [9] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE User Guide - HTTP Implementation. <http://www.openarchives.org/ore/http>, 2008.
- [10] Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Michael Nelson, Robert Sanderson, and Simeon Warner. ORE User Guide - Resource Map Discovery. <http://www.openarchives.org/ore/discovery>, 2008.
- [11] Carl Lagoze, Herbert Van de Sompel, Michael L. Nelson, and Simeon Warner. Conveying rights expressions about metadata in the OAI-PMH framework. <http://www.openarchives.org/OAI/2.0/guidelines-rights.htm>, 2005.
- [12] Carl Lagoze, Herbert Van de Sompel, Michael L. Nelson, Simeon Warner, Patrick Hochstenbach, and Henry Jerez. Specification for an OAI Static Repository and an OAI Static Repository Gateway. <http://www.openarchives.org/OAI/2.0/guidelines-static-repository.htm>, 2003.
- [13] Carl Lagoze, Herbert Van de Sompel, Michael L. Nelson, and Simeon Warner. Implementation guidelines for the Open Archives Initiative Protocol for Metadata Harvesting. <http://www.openarchives.org/OAI/2.0/guidelines.htm>, 2005.
- [14] Carl Lagoze, Herbert Van de Sompel, Michael L. Nelson, and Simeon Warner. The Open Archives Initiative Protocol for Metadata Harvesting. <http://www.openarchives.org/OAI/openarchivesprotocol.html>, 2002.

Proceedings Edited

- [1] José Borbinha, Michael L. Nelson, and Steve Knight, editors. *Proceedings of the 10th International Conference on Preservation of Digital Objects iPRES 2013, Lisbon, Portugal, September 3-5, 2013*, 2013.
- [2] Karim B. Boughida, Barrie Howard, Michael L. Nelson, Herbert Van de Sompel, and Ingeborg Sølvsberg, editors. *Proceedings of the 12th ACM/IEEE-CS Joint Conference on Digital Libraries, JCDL '12, Washington, DC, USA, June 10-14, 2012*. ACM, 2012.
- [3] Gary Marchionini, Michael L. Nelson, and Catherine C. Marshall, editors. *ACM/IEEE Joint Conference on Digital Libraries, JCDL 2006, Chapel Hill, NC, USA, June 11-15, 2006, Proceedings*. ACM, 2006.
- [4] Michael L. Nelson, Kurt Maly, Mohammad Zubair, and Diann Rucsh-Feja, editors. *Experimental OAI-Based Digital Library Systems, Workshop at the 2001 European Conference on Digital Libraries (ECDL), Darmstadt Germany, September 8, 2001*. NASA (NASA/TM-2002-211638), 2002.

Book Chapters

- [1] Michael L. Nelson, Carl Lagoze, Herbert Van de Sompel, Pete Johnston, Robert Sanderson, and Simeon Warner. Object Reuse and Exchange. In *Wireless Communication and Information – Radio Engineering and Multimedia Applications*, pages 259–265. Verlag Werner Hulsbusch, 2009.
- [2] 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, 2007.
- [3] 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. The Icfai University Press, 2007.
- [4] Gretchen L. Gottlich, John M. Meyer, Michael L. Nelson, and David J. Bianco. Integrating information technology into large organizations. In *Cases in Information Technology Management in Modern Organizations*, pages 210–225. Idea Group Inc., 1997.

Refereed Journals

- [1] Sawood Alam, Michael L. Nelson, Herbert Van de Sompel, Lyudmila L. Balakireva, Harihar Shankar, and David S. H. Rosenthal. Web archive profiling through cdx summarization. *International Journal on Digital Libraries*, 17(3):223–228, 2016.
- [2] Yasmin AlNoamany, Michele C. Weigle, and Michael L. Nelson. Characteristics of social media stories: What makes a good story? *International Journal on Digital Libraries*, 17(3):239–256, 2016.
- [3] Yasmin AlNoamany, Michele C. Weigle, and Michael L. Nelson. Detecting off-topic pages within TimeMaps in Web archives. *International Journal on Digital Libraries*, 17(3):203–221, 2016.
- [4] Justin F. Brunelle, Mat Kelly, Hany SalahEldeen, Michele C. Weigle, and Michael L. Nelson. Not all mementos are created equal: measuring the impact of missing resources. *International Journal on Digital Libraries*, 16(3-4):283–301, 2015.
- [5] Charles L. Cartledge and Michael L. Nelson. When should I make preservation copies of myself? - and after I do, how will I send messages to my copies? *International Journal on Digital Libraries*, 16(3-4):183–205, 2015.
- [6] Justin F. Brunelle, Mat Kelly, Michele C. Weigle, and Michael L. Nelson. The impact of JavaScript on archivability. *International Journal on Digital Libraries*, pages 1–23, 2015.
- [7] Scott G. Ainsworth and Michael L. Nelson. Evaluating sliding and sticky target policies by measuring temporal drift in acyclic walks through a web archive. *International Journal on Digital Libraries*, 16(2):129–144, 2015.
- [8] Ahmed AlSum, Michele C. Weigle, Michael L. Nelson, and Herbert Van de Sompel. Profiling web archive coverage for top-level domain and content language. *International Journal on Digital Libraries*, 14(3):149–166, 2014.
- [9] Yasmin AlNoamany, Ahmed AlSum, Michele C. Weigle, and Michael L. Nelson. Who and what links to the Internet Archive. *International Journal on Digital Libraries*, 14(3):101–115, 2014.
- [10] Martin Klein and Michael L. Nelson. Moved but not gone: an evaluation of real-time methods for discovering replacement web pages. *International Journal on Digital Libraries*, 14(1-2):17–38, 2014.
- [11] Carl Lagoze, Michael L. Nelson, Herbert Van de Sompel, Simeon Warner, Robert Sanderson, and Pete Johnston. A Web-Based Resource Model for Scholarship 2.0: Object Reuse & Exchange. *Concurrency and Computation: Practice and Experience*, 24(18):2221–2240, 2012.
- [12] Frank McCown, Catherine C. Marshall, and Michael L. Nelson. Why websites are lost (and how they're sometimes found). *Communications of the ACM*, 52(11):141–145, 2009.

- [13] Michael L. Nelson, Frank McCown, Joan A. Smith, and Martin Klein. Using the web infrastructure to preserve web pages. *International Journal on Digital Libraries*, 6(4):327–349, 2007.
- [14] Johan Bollen, Michael L. Nelson, Gary Geisler, and Raquel Araujo. Usage derived recommendations for a video digital library. *Journal of Network and Computer Applications*, 30(3):1059–1083, 2007.
- [15] Frank McCown, Xiaoming Liu, Michael L. Nelson, and Mohammad Zubair. Search engine coverage of the OAI-PMH corpus. *IEEE Internet Computing*, 10(2):66–73, 2006.
- [16] Michael L. Nelson and Herbert Van de Sompel. IJDL special issue on complex digital objects: Guest editors' introduction. *International Journal on Digital Libraries*, 6(2):113–114, 2006.
- [17] Xiaoming Liu, Johan Bollen, Michael L. Nelson, and Hebert Van de Sompel. Co-authorship networks in the digital library research community. *Information Processing and Management*, 41(6):1462–1480, 2005.
- [18] Xiaoming Liu, Kurt Maly, Michael L. Nelson, and Mohammad Zubair. Lessons Learned with Arc, an OAI-PMH Service Provider. *Library Trends*, 53(4):590–603, 2005.
- [19] Michael L. Nelson, JoAnne R. Calhoun, and Terry L. Harrison. OAI and NASA scientific and technical information. *Library Hi-Tech*, 21(2):140–150, 2003.
- [20] Xiaoming Liu, Kurt Maly, Mohammad Zubair, Qiaoling Hong, Michael L. Nelson, Frances Knudson, and Irma Holtkamp. Federated Searching Interface Techniques for Heterogeneous OAI Repositories. *Journal of Digital Information*, 2(4), 2002.
- [21] Michael L. Nelson and Kurt Maly. Buckets: smart objects for digital libraries. *Communications of the ACM*, 44(5):60–62, 2001.
- [22] Michael L. Nelson. Buckets A new digital library technology for preserving NASA research. *Journal of Government Information*, 28(4):369–394, 2001.
- [23] Michael L. Nelson. Better interoperability through the Open Archives Initiative. *New Review of Information Networking*, 7:133–146, 2001.
- [24] Nancy R. Kaplan and Michael L. Nelson. Determining the publication impact of a digital library. *Journal of the American Society for Information Science*, 51(4):324–339, 2000.
- [25] Michael L. Nelson and Kurt Maly. Preserving the pyramid of STI using buckets. *International Journal on Grey Literature*, 1(4):174–178, 2000.
- [26] Sandra L. Esler and Michael L. Nelson. Evolution of scientific and technical information distribution. *Journal of the American Society for Information Science*, 49(1):82–91, 1998.
- [27] Sandra L. Esler and Michael L. Nelson. NASA indexing benchmarks: evaluating text search engines. *Journal of Network and Computer Applications*, 20(4):339–353, 1997.
- [28] Sandra L. Esler and Michael L. Nelson. TRSkit: A Simple Digital Library Toolkit. *Journal of Internet Cataloging*, 1(2):41–55, 1997.
- [29] Michael L. Nelson and Ming-Hokng Maa. Optimizing the NASA Technical Report Server. *Internet Research: Electronic Network Applications and Policy*, 6(1):64–70, 1996.
- [30] Michael L. Nelson, Gretchen L. Gottlich, David J. Bianco, Sharon S. Paulson, Robert L. Binkley, Yvonne D. Kellogg, Chris J. Beaumont, Robert B. Schmunk, Michael J. Kurtz, Alberto Accomazzi, and Omar Syed. The NASA technical report server. *Internet Research: Electronic Network Applications and Policy*, 5(2):25–36, 1995.

Refereed Conferences and Workshops

- [1] Mat Kelly, Sawood Alam, Michael L. Nelson, and Michele C. Weigle. Interplanetary wayback: Peer-to-peer permanence of web archives. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 411–416, 2016.

- [2] Sawood Alam, Michael L. Nelson, Herbert Van de Sompel, and David S. H. Rosenthal. Web archive profiling through fulltext search. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 121–132, 2016.
- [3] Sawood Alam, Mat Kelly, and Michael L. Nelson. Interplanetary wayback: The permanent web archive. In *JCDL '16: Proceedings of the 16th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 273–274, 2016.
- [4] Sawood Alam and Michael L. Nelson. Memgator - a portable concurrent memento aggregator: Cross-platform cli and server binaries in go. In *JCDL '16: Proceedings of the 16th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 243–244, 2016.
- [5] Alexander Nwala and Michael L. Nelson. A supervised learning algorithm for binary domain classification of web queries using serps. In *JCDL '16: Proceedings of the 16th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 237–238, 2016.
- [6] Justin F. Brunelle, Michele C. Weigle, and Michael L. Nelson. Archiving deferred representations using a two-tiered crawling approach. In *iPRES 2015: Proceedings of the 12th International Conference on Preservation of Digital Objects*, 2015.
- [7] Scott G. Ainsworth and Michael L. Nelson. Only one out of five archived web pages existed as presented. In *HT '15: Proceedings of the 26th ACM Conference on Hypertext and Hypermedia*, pages 257–266, 2015.
- [8] Sawood Alam, Michael L. Nelson, Herbert Van de Sompel, Lyudmila Balakireva, Harihar Shankar, and David S. H. Rosenthal. Web archive profiling through cdx summarization. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 3–14, 2015.
- [9] Mohamed Aturban, Michael L. Nelson, and Michele C. Weigle. Quantifying orphaned annotations in hypothes.is. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 15–27, 2015.
- [10] Yasmin AlNoamany, Michele C. Weigle, and Michael L. Nelson. Detecting off-topic pages in web archives. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 225–237, 2015.
- [11] Yasmin AlNoamany, Michele C. Weigle, and Michael L. Nelson. Characteristics of social media stories. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 267–47, 2015.
- [12] Hany M. SalahEldeen and Michael L. Nelson. Predicting temporal intention in resource sharing. In *JCDL '15: Proceedings of the 15th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 205–214, 2015.
- [13] Wesley Jordan, Mat Kelly, Justin F. Brunelle, Laura Vobrak, Michele C. Weigle, and Michael L. Nelson. Mobile mink: Merging mobile and desktop archived webs. In *JCDL '15: Proceedings of the 15th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 243–244, 2015.
- [14] Lulwah Alkwai, Michael L. Nelson, and Michele C. Weigle. How well are Arabic websites archived? In *JCDL '15: Proceedings of the 15th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 223–232, 2015.
- [15] Sawood Alam, Fateh ud din B Mehmood, and Michael L. Nelson. Improving accessibility of archived raster dictionaries of complex script languages. In *JCDL '15: Proceedings of the 15th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 47–56, 2015.
- [16] Mat Kelly, Michael L. Nelson, and Michele C. Weigle. The archival acid test: Evaluating archive performance on advanced HTML and JavaScript. In *JCDL '14: Proceedings of the 14th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 25–28, 2014.
- [17] Mat Kelly, Michael L. Nelson, and Michele C. Weigle. Mink: Integrating the live and archived web viewing experience using web browsers and Memento. In *JCDL '14: Proceedings of the 14th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 469–470, 2014.
- [18] Justin F. Brunelle, Mat Kelly, Hany SalahEldeen Michele C. Weigle, and Michael L. Nelson. Not all mementos are created equal: Measuring the impact of missing resources. In *JCDL '14:*

- Proceedings of the 14th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 321–330, 2014.
- [19] Charles L. Cartledge and Michael L. Nelson. When should I make preservation copies of myself? In *JCDL '14: Proceedings of the 14th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 1–10, 2014.
 - [20] Ahmed AlSum and Michael L. Nelson. Thumbnail summarization techniques for web archives. In *ECIR '14: Proceedings of the 36th European Conference in Information Retrieval*, pages 299–310, 2014.
 - [21] Frank McCown and Michael L. Nelson. Resources for teaching web science to computer science undergraduates. In *Proceedings of ACM SIGCSE*, 2014.
 - [22] Mat Kelly, Michael L. Nelson, and Michele C. Weigle. Graph-based navigation of a box office prediction system. In *Proceedings of IEEE Visualization (VIS 2013)*, 2013.
 - [23] Mat Kelly, Justin F. Brunelle, Michele C. Weigle, and Michael L. Nelson. On the change in archivability of websites over time. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 35–47, 2013.
 - [24] Justin F. Brunelle, Michael L. Nelson, Lyudmila Balakireva, Robert Sanderson, and Herbert Van de Sompel. Evaluating sitestory with the ApacheBench tool. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 204–215, 2013.
 - [25] Yasmin AlNoamany, Ahmed AlSum, Michele C. Weigle, and Michael L. Nelson. Who and what links to the Internet Archive. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 346–357, 2013.
 - [26] Ahmed AlSum, Michele C. Weigle, Michael L. Nelson, and Herbert Van de Sompel. Profiling web archive coverage for top-level domain and content language. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 60–71, 2013.
 - [27] Hany M. SalahEldeen and Michael L. Nelson. Resurrecting my revolution: Using social link neighborhood in bringing context to the disappearing web. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 333–345, 2013.
 - [28] Justin F. Brunelle and Michael L. Nelson. An evaluation of caching policies for memento timemaps. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 267–276, 2013.
 - [29] Scott G. Ainsworth and Michael L. Nelson. Evaluating sliding and sticky target policies by measuring temporal drift in random walks through a web archive. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 39–48, 2013.
 - [30] Hany M. SalahEldeen and Michael L. Nelson. Reading the correct history? modeling temporal intention in resource sharing. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 257–266, 2013.
 - [31] Yasmin AlNoamany, Michele C. Weigle, and Michael L. Nelson. Access patterns for robots and humans in web archives. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 339–348, 2013.
 - [32] Ahmed AlSum and Michael L. Nelson. ArcLink: Optimization techniques to build and retrieve the temporal web graph. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 377–378, 2013.
 - [33] Heather Tweedy, Frank McCown, and Michael L. Nelson. A Memento web browser for iOS. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 371–372, 2013.
 - [34] Daniel Sebastia, Frank McCown, and Michael L. Nelson. Semi-automated rediscovery of lost YouTube music videos. In *JCDL '13: Proceedings of the 13th ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 421–422, 2013.

- [35] Bernhard Haslhofer, Simeon Warner, Carl Lagoze, Martin Klein, Robert Sanderson, Michael L. Nelson, and Herbert Van de Sompel. ResourceSync: leveraging sitemaps for resource synchronization. In *WWW (Companion Volume)*, pages 11–14, 2013.
- [36] Ahmed Alsum, Michael L. Nelson, Robert Sanderson, and Herbert Van de Sompel. Archival HTTP redirection retrieval policies. In *Proceedings of TempWeb 2013*, 2013.
- [37] Hany SalahEldeen and Michael L. Nelson. Carbon dating the web: estimating the age of web resources. In *Proceedings of TempWeb 2013*, 2013.
- [38] Hany SalahEldeen and Michael L. Nelson. Losing my revolution: How many resources shared on social media have been lost? In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 125–137, 2012.
- [39] Carlton Northern and Michael L. Nelson. Unsupervised approach to discovering and disambiguating social media profiles. In *Proceedings of Mining Data Semantics (MDS 2011)*, 2011.
- [40] Martin Klein and Michael L. Nelson. Find, new, copy, web, page - tagging for the (re-)discovery of web pages. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 27–39, 2011.
- [41] Matthias Prellwitz and Michael L. Nelson. Music video redundancy and half-life in youtube. In *Proceedings of Theory and Practice of Digital Libraries (TPDL)*, pages 143–150, 2011.
- [42] Scott G. Ainsworth, Ahmed Alsum, Hany SalahEldeen, Michele C. Weigle, and Michael L. Nelson. How much of the web is archived? In *Proceedings of the 11th annual international ACM/IEEE Joint Conference on Digital Libraries, JCDL '11*, pages 133–136, 2011.
- [43] Martin Klein, Jeb Ware, and Michael L. Nelson. Rediscovering missing web pages using link neighborhood lexical signatures. In *Proceedings of the 11th annual international ACM/IEEE Joint Conference on Digital Libraries, JCDL '11*, pages 137–140, 2011.
- [44] Abdulla Alasaadi and Michael L. Nelson. Persistent annotations deserve new uris. In *Proceedings of the 11th annual international ACM/IEEE Joint Conference on Digital Libraries, JCDL '11*, pages 195–198, 2011.
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- [60] Ming-Hokng Maa and Michael L. Nelson. Recent Improvements in the NASA Technical Report Server. Technical Report NASA TM-110209, NASA Langley Research Center, 1996.
- [61] Michael L. Nelson and David J. Bianco. Accessing NASA Technology With the World Wide Web. *IEEE Aerospace and Electronic Systems Magazine*, 10(5):7–13, 1995.
- [62] Donna G. Roper, Mary K. McCaskill, Scott D. Holland, Joanne L. Walsh, Michael L. Nelson, Susan L. Adkins, Manjula Y. Ambur, and Bryan A. Campbell. A Strategy for Electronic Dissemination of NASA Langley Technical Publications. Technical Report NASA TM-109172, NASA Langley Research Center, 1994.
- [63] Michael L. Nelson, Gretchen L. Gottlich, and David J. Bianco. World Wide Web implementation of the Langley Technical Report Server. Technical Report NASA TM-109162, NASA Langley Research Center, 1994.
- [64] Joseph A. Kaplan and Michael L. Nelson. A comparison of queueing, cluster and distributed computing systems. Technical Report NASA TM-109025 (Revision 1), NASA Langley Research Center, 1994.
- [65] Michael L. Nelson and Gretchen L. Gottlich. Electronic document distribution: Design of the anonymous FTP Langley Technical Report Server. Technical Report NASA TM-4567, NASA Langley Research Center, 1994.
- [66] Trey Arthur and Michael L. Nelson. Intel NX to PVM3.2 Message Passing Conversion Library. Technical Report NASA TM-109038, NASA Langley Research Center, 1993.
- [67] Joseph A. Kaplan and Michael L. Nelson. A comparison of queueing, cluster and distributed computing systems. Technical Report NASA TM-109025, NASA Langley Research Center, 1993.

Tutorials

- 2014-09-22 "Tools and Techniques for Revisiting Online Scholarly Content" (with Herbert Van de Sompel and Martin Klein and Richard Wincewicz), JCDL 2014 Tutorial, London UK
- 2013-09-22 "ResourceSync: The NISO/OAI Resource Synchronization Framework" (with Herbert Van de Sompel and Martin Klein and Robert Sanderson), TPDFL 2013 Tutorial, Valetta Malta

- 2008-06-16 "Object Reuse and Exchange: The OAI-ORE Framework" (with Carl Lagoze, Herbert Van de Sompel and Simeon Warner), ACM/IEEE JCDL 2008 Tutorial, Pittsburgh PA
- 2006-06-(14-16) OAI-PMH Tutorial and Consultation, University of Southern California Libraries
- 2003-05-27 "Advanced Tutorial on Open Archives Initiative" (with Herbert Van de Sompel and Simeon Warner), ACM/IEEE JCDL 2003 Tutorial, Houston TX
- 2002-07-14 "Advanced Overview of Version 2.0 of the Open Archives Initiative Protocol for Metadata Harvesting" (with Herbert Van de Sompel and Simeon Warner), ACM/IEEE JCDL 2002 Tutorial, Portland OR

Invited Presentations

- 2016-08-22 "We Need Multiple, Independent Web Archives", Documenting the Now Advisory Board, St. Louis, MO
- 2016-04-11 "Combining Heritrix and PhantomJS for Better Crawling of Pages with Javascript", IIPC General Assembly, Reykjavik, Iceland
- 2016-04-05 "Storytelling for Summarizing Collections in Web Archives", CNI Spring 2016, San Antonio, TX
- 2016-04-03 "Why We Need Multiple Archives", Digital Preservation of Federal Information Summit CNI Spring 2016, San Antonio, TX
- 2015-11-13 "Combining Storytelling and Web Archives", EE Department Colloquium, Norfolk, VA
- 2015-04-28 "Evaluating the Temporal Coherence of Archived Pages", IIPC General Assembly, Stanford, CA
- 2015-02-24 "Information Loss and Decay of the World Wide Web", The Declinism Seminars: Decay, Cambridge, MA
- 2014-07-23 "Assessing the Quality of Web Archives", Digital Preservation 2014, Washington DC
- 2013-09-06 "Who Will Archive the Archives? Thoughts About the Future of Web Archiving", Wolfram Data Summit 2013, Washington DC
- 2013-04-23 "More Archives, More Better", IIPC General Assembly 2013, Ljubljana, Slovenia
- 2013-04-22 "Old Dominion University Computer Science IIPC New Member", IIPC General Assembly 2013, Ljubljana, Slovenia
- 2012-09-10 "A Plan For Curating "Obsolete Data or Resources"", UNC/NSF Workshop "Curating for Quality: Ensuring Data Quality to Enable New Science", Arlington, VA
- 2011-10-24 "Memento: Time Travel for the Web", UNT College of Information Colloquium, Denton, TX
- 2011-10-24 "Memento: Time Travel for the Web", UNT College of Information Colloquium, Denton, TX
- 2011-05-10 "Memento: Updated technical details", 2011 IIPC General Assembly, The Hague, the Netherlands
- 2010-11-10 "Memento: Time Travel for the Web", UNC Scholarly Communications Working Group, Chapel-Hill, NC
- 2010-09-09 "My Point of View", Web Archiving Cooperative Kick-off Meeting, Menlo-Park, CA
- 2010-09-09 "Review of Web Archiving", Web Archiving Cooperative Kick-off Meeting, Menlo-Park, CA
- 2010-06-21 "Memento: Time Travel for the Web", NDIIPP Partners Meeting, Washington DC
- 2009-12-15 "Memento: Time Travel for the Web", CNI Fall 2009 Project Briefing, Washington DC
- 2009-11-16 "Memento: Time Travel for the Web", Library of Congress Brown Bag Seminar, Washington DC
- 2009-10-29 "The Open Archives Initiative Object Reuse and Exchange Project", Keynote at RIBDA 2009, Lima Peru
- 2009-10-15 "The Open Archives Initiative Object Reuse and Exchange Project", Keynote at WCI 2009, Berlin Germany
- 2009-10-02 "(Re-)Discovering Lost Web Pages", Emory University Computer Science Department Colloquium, Atlanta GA
- 2009-10-01 "The Open Archives Initiative Object Reuse and Exchange Project", Emory University Library Colloquium, Atlanta GA
- 2009-06-25 "Synchronicity: Just-In-Time Discovery of Lost Web Pages", NDIIPP Partners Meeting, Washington DC
- 2009-03-13 "Can't Find Your 404s?", Santa Fe Complex Colloquium, Santa Fe NM
- 2009-03-12 "(Re-)Discovering Lost Web Pages", LANL Research Library Colloquium, Los Alamos NM
- 2008-09-07 "Tools for a Preservation-Ready Web", NDIIPP Partners Meeting, Ballston VA
- 2008-07-20 "Recommendations for a NASA Digital Library", NASA LaRC Technical Library Branch, Hampton VA
- 2007-05-16 "The Open Archives Initiative", Digital data preservation, sharing, and discovery: Challenges for Small Science Communities in the Digital Era, Durham NC
- 2007-01-17 "Using OAI-PMH Resource Harvesting & MPEG-21 DIDL for Digital Preservation", NDIIPP Partners Meeting, San Diego CA
- 2006-12-06 "How much preservation do I get if I do absolutely nothing? Using the Web Infrastructure for Digital Preservation", Media Production 2006, Berlin Germany
- 2006-12-01 "Evaluating Ingest Success: Using the AIHT", DCC/LUCAS Workshop, Liverpool UK
- 2006-06-29 "Thinking Differently About Web Page Preservation", Library of Congress Seminar, Washington DC
- 2005-10-20 "What's new from the OAI", OAI-4, Geneva Switzerland
- 2005-10-20 "OAI-PMH for resource harvesting", OAI-4, Geneva Switzerland

- 2005-07-12 "ODU AIHT", NDIIPP Partners Meeting, Warrenton VA
- 2005-06-23 "A New Model for Web Resource Harvesting", NASA/Raytheon Technology Infusion Team Meeting, Hampton VA
- 2005-05-17 "Shared Infrastructure Preservation Models", DIGARCH PI Meeting, Atlanta GA
- 2005-05-05 "Harvesting Resources with OAI-PMH", SOLINET Annual Membership Meeting, Atlanta GA
- 2005-03-29 "A New Model for Web Resource Harvesting", University of Florida Department of Computer Science Colloquium
- 2004-05-28 "Implementation of Digital Libraries", International Congress of Health Information, Lima Peru
- 2004-05-06 "A Review of Institutional Repository Projects and Technologies", Texas A&M Department of Computer Science Colloquium
- 2003-11-03 "New Digital Library Possibilities Using the OAI-PMH", First Latin American Workshop on the Production and Diffusion of Electronic Theses, Santiago Chile
- 2003-09-16 "Self-Preserving Digital Objects", AISTI Mini Conference, Santa Fe New Mexico
- 2003-09-12 "Institutional Archives Technology Overview", FLICC Workshop: Institutional Archives and Repositories in Government, Washington DC
- 2003-06-24 "U.S. Government Use of the OAI-PMH", IndoUS Workshop on Open Digital Libraries and Interoperability, Arlington VA
- 2003-03-20 "U.S. Government Use of the OAI-PMH", ISTE / NSF Ibero-American Digital Library Joint Project Development Symposium, Campinas, Brazil
- 2003-02-05 "Service Providers: Future Perspectives", Professional Scholarly Publishing Annual Conference, Washington DC
- 2002-10-18 "Service Providers: Future Perspectives", OAI Workshop, CERN Switzerland
- 2002-10-02 "New Digital Library Possibilities Using the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)", International Conference on Scientific Electronic Publishing in Developing Countries, Valparaiso, Chile
- 2002-05-13 "New Developments in OAI", Open Archives Forum, Pisa Italy
- 2002-04-03 "OAI: XML-Based Digital Library Interoperability", CENDI: Federal STI Managers Meeting, Beltsville MD
- 2001-08-16 "OAI : Past, Present and Future", Managing Digital Video Content Workshop, Atlanta GA
- 2001-07-11 "OAI : Past, Present and Future", Open Archives Meeting: Developing an Agenda for Institutional E-print Archives, London UK
- 2001-04-21 "Uses of OAI in NASA", NASA STI Managers Meeting, Greenbelt MD
- 2000-12-12 "The Open Archives Initiative", Exploration 2000: Workshop on Web-Based Language Documentation and Description, Philadelphia, PA
- 1999-11-09 "Smart Objects and Dumb Archives: Using Buckets in Digital Libraries", ICASE Colloquium, Hampton, VA
- 1996-10-24 "Understanding the Internet's Role in Technology Transfer and Organizational Strategy", October Meeting of the Pittsburgh Large User Group (PLUG), Pittsburgh, PA
- 1996-10-09 "Using DCE/DFS in a Production Workstation Cluster", ICASE/LaRC 2nd Industry Roundtable, Williamsburg, VA
- 1996-06-24 "WWW: An Overview of Technologies, Concepts, and Directions", Army Training Support Center, Fort Eustis, VA
- 1994-10-22 "Changing the Way We do Business Through Use of the World Wide Web and NCSA Mosaic", Virginia Society of Professional Engineers, Hampton, VA
- 1993-05-11 "PVM Use in Computational Aerospaces Projects", First PVM Users Group Meeting, Knoxville, TN

Ph.D. Students

- 2007 **Frank McCown**, *Assistant Professor, Harding University*, Dissertation Title: Lazy Preservation: Reconstructing Websites from the Web Infrastructure.
- 2008 **Joan A. Smith**, *Chief Technology Strategist, Emory University Libraries*, Dissertation Title: Integrating Preservation Functions Into the Web Server.
- 2011 **Martin Klein**, *Post-doctoral Researcher, Los Alamos National Laboratory*, Dissertation Title: Using the Web Infrastructure for Real Time Recovery of Missing Web Pages.
- 2014 **Ahmed Alsum**, *Web Archive Engineer, Stanford University Libraries*, Dissertation Title: Web Archive Services Framework For Tighter Integration Between the Past and Present Web.
- 2014 **Charles L. Cartledge**, *System Engineer, Fulcrum LLC*, Dissertation Title: Unsupervised Small-World (USW): A Framework for Web Object Self-Preservation.
- 2015 **Hany SalahEldeen**, *Technical Staff, Microsoft*, Detecting, Modeling, and Predicting User Temporal Intention in Social Media.
- 2016 **Justin Brunelle**, *Lead Researcher, MITRE*, Scripts in a Frame: A Framework for Archiving Deferred Representations.

- 2016 **Yasmin AlNomany**, *Post-doctoral Researcher, UC Berkeley*, Using Web Archives to Enrich the Live Web Experience Through Storytelling.
- 2017* **Scott Ainsworth**, Dissertation Topic: Evaluation of Inter-Archive Access Policies.
- 2018* **Sawood Alam**, Dissertation Topic: Routing of Memento Queries.
- 2018* **Shawn Jones**.
- 2018* **Alexander Nwala**.

M.S. Students

Thesis Option

- 2005 Terry L. Harrison, Thesis Title: Opal: In Vivo Based Preservation Framework for Locating Lost Web Pages
- 2008 Rabia Haq, Thesis Title: Using Timed-Release Cryptography to Mitigate the Preservation Risk of Embargo Periods
- 2013 Sawood Alam, Thesis Title: HTTP Mailbox - Asynchronous RESTful Communication
- 2015 Shawn Jones, Thesis Title: Using the Memento MediaWiki Extension to Avoid Spoilers

Project Option

- 2004 Sheffan Chan, Thomas Lutkenhouse
- 2005 Aravind Elango, Giridhar Manepalli, Suchitra Manepalli, Daniel Swaney
- 2006 Ignacio Garcia del Campo
- 2007 Amine Benjelloun, Manoranjan Magudam
- 2008 Olena Hunsicker, Venkata Sai Krishna Kamineni, Satish Lakkoju, Krishnan Ganesh Madras
- 2009 Sudhir Koneru, Venkata Potta
- 2010 Scott Ainsworth, Matthias Prellwitz, Jeffery Shipman, Jeb Ware
- 2011 Carlton Northern

Teaching

Old Dominion University

- CS 895 Web-Based Information Retrieval - S14, S13, F11
- CS 895 Time on the Web - F10
- CS 795/895 Collective Intelligence - S09
- CS 791/891 Web Syndication Formats - S08
- CS 791/891 Technologies of Google Seminar - S07
- CS 791/891 Economics of Information Seminar - S06
- CS 791/891 Digital Preservation Seminar - S05, S04
- CS 751/851 Introduction to Digital Libraries - S15, S11, S10, F06
- CS 734/834 Introduction to Information Retrieval - F16, F15
- CS 695 Introduction to Digital Libraries - F05, F04, F03, F02
- CS 495/595 Introduction to Web Science - F14, F13
- CS 495/595 Peer-to-Peer Information Systems - F04, F03
- CS 495/595 Web Server Design - S12, S09, S07, S06
- CS 432/532 Web Science - S16
- CS 418/518 Web Programming - F08, F07, F06
- CS 410 Computer Based Productivity I - S03

Unviersity of North Carolina

- INLS 110 Introduction to Digital Libraries - S01
- INLS 210 Complex Objects for Digital Libraries - S01

Old Dominion University (While at NASA LaRC)

- CS 495/595 Introduction to Digital Libraries - F99
- CS 745/845 Introduction to Digital Libraries - F98

Service

Editorial Boards

- 2005-present International Journal of Digital Libraries (IJDL)
2005-2006 ACM Journal on Education Resources in Computing (JERIC)

Steering Committees

- 2014-2016 JCDL Steering Committee Chair
2011-2014 JCDL Steering Committee

Organizing Committees

- 2013 Program Co-Chair, 10th International Conference on Preservation of Digital Objects (iPRES)
2012 Program Co-Chair, ACM/IEEE Joint Conference on Digital Libraries
2011, 2009, 2008 Doctoral Consortium Co-Chair, ACM/IEEE Joint Conference on Digital Libraries
2011, 2007 Workshop Chair, ACM/IEEE Joint Conference on Digital Libraries
2006 Program Co-Chair, ACM/IEEE Joint Conference on Digital Libraries
2005 Tutorial Co-Chair, ACM/IEEE Joint Conference on Digital Libraries
2002 Co-Chair, Workshop on Distributed Computing Architectures for Digital Libraries (joint with ICPP 2002)
2001 Sponsoring and Exhibiting Chair, ACM/IEEE Joint Conference on Digital Libraries
2001 Co-Chair, Workshop on Experimental OAI-Based Digital Library Systems (joint with ECDL 2001)

Program Committees

- 2014 Digital Preservation (NDIIPP/NDSA)
2016-2013, 2011-2007, 2005-2002 ACM/IEEE Joint Conference on Digital Libraries (JCDL)
2016-2010 ACM Special Interest Group on Information Retrieval (SIGIR)
2012 ACM International Conference on Web Search and Data Mining (WSDM)
2009, 2007, 2005 ACM Workshop on Web Information and Data Management (WIDM)
2010, 2009 European Conference on Digital Libraries (ECDL)
2005-2003 Healthcare Digital Libraries Workshop (HDL)
2016-2011, 2008, 2007 International Conference on Asian Digital Libraries (ICADL)
2009 International Workshop on Innovation in Digital Preservation (InDP)
2010, 2009 International Web Archiving Workshop (IWAW)
2009 International World Wide Web Conference (WWW)
2016-2011 Temporal Web Analytics Workshop (TAWW)
2016-2011 Theory and Practice of Digital Libraries (TPDL)

Reviewer

- ACM Journal on Educational Resources in Computing
- ACM Transactions on Internet Technology
- ACM Transactions on the Web
- Communications of the ACM
- Data & Knowledge Engineering
- IEEE Internet Computing
- IEEE Intelligent Systems
- IEEE Systems, Man and Cybernetics Part A
- IEEE Transactions on Computers
- IEEE Transactions on Parallel and Distributed Systems
- Information Sciences

- International Journal of Digital Libraries
- Health Informatics Journal

Advisory Boards

2016-present	Documenting the Now
2013-present	Virginia Tech, Integrated Digital Event Archiving and Library (IDEAL)
2006-present	University of Arizona, Graduate Certificate in Digital Information Management
2001-present	Open Language Archive Community (OLAC)
2008-2010	H-Net Archivist Advisory Board

Professional Society Memberships

- Member, Association of Computing Machinery (ACM)
- Member, Institute of Electrical and Electronics Engineers (IEEE) Computer Society
- Member, American Society for Information Science & Technology (ASIS&T)