

Michael C. Loui

Coordinated Science Laboratory
1308 West Main Street
Urbana, IL 61801-2307

Phone: 217-333-2595
E-mail: loui@illinois.edu
Web: <http://publish.illinois.edu/loui>

Education

B.S., Mathematics and Computer Science, Yale University, 1975
S.M., Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1977
Ph.D., Computer Science, Massachusetts Institute of Technology, 1980

Academic and Professional Appointments

University of Illinois at Urbana-Champaign

Visiting Assistant Professor of Electrical Engineering, 1981–82
Assistant Professor of Electrical Engineering, 1982–86
Associate Professor of Electrical and Computer Engineering, 1986–91
Professor of Electrical and Computer Engineering, 1991–2014
Campus Honors Faculty, 1994–2014
Associate Dean of the Graduate College, 1996–2000
Affiliate Professor of Educational Organization and Leadership, 2007–11
Affiliate, Department of Education Policy, Organization and Leadership, 2011–14
Professor Emeritus of Electrical and Computer Engineering, since 2014

National Science Foundation

Program Director, Theory of Computing Program, 1990–91

Carnegie Mellon University

Visiting Scientist, Computer Science Department, 2000–01

Purdue University

Visiting Scholar, School of Engineering Education, 2012–13
Dale and Suzi Gallagher Professor of Engineering Education, 2014–19
Adjunct/Visiting Professor of Engineering Education, since 2019

Honors

University Distinguished Teacher-Scholar, Univ. Illinois at Urbana-Champaign, 2001
Carnegie Scholar, Carnegie Foundation for the Advancement of Teaching, 2003
Fellow, Institute of Electrical and Electronics Engineers, 2006
Distinguished Life Member, National Institute for Engineering Ethics, 2008
Fellow, American Society for Engineering Education, 2018

Awards

Hertz Foundation Graduate Fellowship, 1975–80
Dow Outstanding Young Faculty Award, American Society for Engineering Education, 1985
EGW12 Award, International Workshop on Engineering Ethics for a Globalized World, 2012
National Academy of Engineering Exemplar in Engineering Ethics Education, 2016

Purdue University

Senior Mentor, Teaching for Tomorrow Fellowship Awards, 2016
Faculty Excellence Award for Leadership in Service, College of Engineering, 2019

University of Illinois at Urbana-Champaign

Everitt Award for Teaching Excellence, College of Engineering, 1984
Engineering Council Advisors List, College of Engineering, 1989, 1992, 1993, 1994, 1995, 1996, 1997, 2003, 2004, 2006, 2007, 2010

Luckman Undergraduate Distinguished Teaching Award, 1995
College of Engineering Teaching Award, 1996
Amy L. Devine Recognition Award, Alpha Omega Epsilon (engineering sorority), 2007
King Broadrick-Allen Award, Campus Honors Program, 2009
Campus Award for Excellence in Graduate Student Mentoring, 2013

Administrative Experience

Graduate College, University of Illinois at Urbana-Champaign

Associate Dean, 1996–2000

Campus Research Standards Officer, 1998–2000

Recommended, implemented, communicated, and interpreted Graduate College policies; approved new and revised graduate courses and degree programs; counseled students and mediated conflicts; gave presentations on applying for graduate study and choosing an advisor; handled allegations of research misconduct; managed people and resources at the Graduate College. Accomplishments:

- Created the Graduate College Outstanding Mentor Award, which celebrates exemplary efforts of the graduate faculty in advising and serving graduate students
- Eliminated the small Thesis/Project Grants, to allocate more funds for the Conference Travel Grant Program
- Simplified the course approval procedure
- Introduced expedited approval of experimental periods for new graduate programs as options within existing degree programs
- Began cross-training of the staff to ensure continuity of service for critical time-sensitive functions, such as appointments of doctoral committees
- Started annual performance reviews, with comments from everyone (360-degree reviews)
- Allocated funds for professional development for all Graduate College staff
- Nominated staff members for awards

National Science Foundation, Washington, D.C.

Program Director, Theory of Computing Program, 1990–91

Administered a budget of \$5.9 million. Evaluated about 80 new grant proposals, with mail and panel reviews. Processed about 50 continuing awards. Communicated extensively with the theory community, both with individuals and through presentations and newsletter articles.

Selected Committee Leadership Experience

Chair, Leadership Studies Minor Working Group, 2008–11; chair, Provost's Ad Hoc Committee to Explore an Interdisciplinary Minor in Leadership Studies, 2006

Worked with colleagues across the campus to define and justify an interdisciplinary undergraduate minor in leadership studies, with research-based foundational courses, elective context courses, and a capstone course. The minor was approved to start in the fall of 2011.

Chair, Campus NCA Accreditation Subcommittee on Leadership for the 21st Century, 2007–08

With a diverse committee of seventeen faculty and administrators, prepared a chapter of the self-study report for the campus accreditation visit in 2009. The chapter explains how students' experiences outside the classroom prepare them for civic and professional leadership.

Chair, Working Group on Theory of Computing, ACM Workshop on Strategic Directions in Computing Research, 1996

Chaired an international committee that negotiated and recommended research directions in algorithms and complexity theory

Chair, Computer Engineering Area Committee, Department of Electrical and Computer Engineering, 1986–88

Coordinated staffing of courses. Initiated modifications in the undergraduate computer engineering curriculum; replaced the required third semester of digital logic (ECE 391, now ECE 462) by data structures and software development (CS 225).

Research Interests

Computational complexity theory, ethics in engineering and computing, scholarship of teaching and learning, engineering education research

Book Chapters

- M. C. Loui and H. H. Abu-Amara, Memory requirements for agreement among unreliable asynchronous processes, *Advances in Computing Research*, ed. F. P. Preparata, vol. 4, pp. 163–183, JAI Press, Greenwich, Conn., 1987.
- M. C. Loui, Complexity theory, in *The Computer Science and Engineering Handbook*, ed. A. B. Tucker, pp. 250–276, CRC Press, Boca Raton, Fla., 1997.
- E. Allender, M. C. Loui, and K. W. Regan, Complexity classes, in *Algorithms and Theory of Computation Handbook*, ed. M. J. Atallah, pp. 27-1 to 27-23, CRC Press, Boca Raton, Fla., 1999.
- E. Allender, M. C. Loui, and K. W. Regan, Reducibility and completeness, in *Algorithms and Theory of Computation Handbook*, ed. M. J. Atallah, pp. 28-1 to 28-28, CRC Press, Boca Raton, Fla., 1999.
- E. Allender, M. C. Loui, and K. W. Regan, Other complexity classes and measures, in *Algorithms and Theory of Computation Handbook*, ed. M. J. Atallah, pp. 29-1 to 29-24, CRC Press, Boca Raton, Fla., 1999.
- E. Allender, M. C. Loui, and K. W. Regan, Complexity theory, in *Computer Science Handbook*, 2nd ed., ed. A. B. Tucker, pp. 5-1 to 5-30, CRC Press, Boca Raton, Fla., 2004.
- M. C. Loui, Moments of inertia: toward an agenda for sociological research on why engineering professors resist changes in pedagogy and curriculum, in *The Acceptance and Diffusion of Innovation: A Cross-Disciplinary Approach to Instructional and Curricular Change in Engineering*, ed. R. Spalter-Roth, N. Fortenberry, and B. Lovitts, pp. 71–77, American Sociological Association, Washington, D.C., 2007.
- M. C. Loui and K. W. Miller, Ethics and professional responsibility in computing, in *Wiley Encyclopedia of Computer Science and Engineering*, ed. B. W. Wah, pp. 1131–1142, Wiley, New York, 2009, [dx.doi.org/10.1002/9780470050118.ecse909](https://doi.org/10.1002/9780470050118.ecse909).
- M. C. Loui, How should the policy apply? Trustworthy decisions in the administration of graduate academic programs, in *The Ethical Challenges of Academic Administration*, pp. 135–141, ed. E. E. Englehardt, M. S. Pritchard, K. D. Romesburg, and B. E. Schrag, Springer, Dordrecht, 2010.
- E. Allender, M. C. Loui, and K. W. Regan, Complexity classes, Reducibility and completeness, and Other complexity classes and measures, in *Algorithms and Theory of Computation Handbook*, 2nd ed., ed. M. J. Atallah and M. Blanton, pp. 22-1 to 22-24, 23-1 to 23-30, and 24-1 to 24-27, CRC Press, Boca Raton, Fla., 2010.
- C. K. Gunsalus and M. C. Loui, Introduction, in *Practical Guidance on Science and Engineering Ethics Education for Instructors and Administrators*, ed. F. F. Benya, C. H. Fletcher, and R. D. Hollander, pp. 1–3, National Academies Press, Washington, D.C., 2013.
- M. C. Loui, Peer review and publication, in *RCR for Engineering: An Introduction to Ethics and Engineering Research*, ed. J. Borenstein and D. Smith, pp. 25–43, CITI Program at the University of Miami, Miami, Fla., 2015.
- M. C. Loui and M. Borrego. Engineering education research, in *Cambridge Handbook of Computing Education Research*, ed. S. A. Fincher and A. V. Robins, pp. 292–321, Cambridge University Press, Cambridge, U.K., 2019.

Videos

- J. H. Smith, S. P. Nichols, M. C. Loui, V. Weil, P. E. Ulmer, C. M. Skooglund, F. Suppe, E. W. LeFevre, and P. Harper, *Incident at Morales: An Engineering Ethics Story*, Video and Study Guide, National Institute for Engineering Ethics, Texas Tech University, Lubbock, Tex., 2003.
- M. C. Loui, Professional ethics in engineering, 2008, Online at www.youtube.com/view_play_list?p=746AE3CCB29B64B8.
- J. H. Smith, M. C. Loui, J. R. Herkert, and S. P. Nichols, *Henry's Daughters*, Video and Study Guide, National Institute for Engineering Ethics, Texas Tech University, Lubbock, Tex., 2010.
- M. C. Loui, The last lecture: College teaching as professional practice, scholarly activity, and transformational leadership, Purdue University, October 2019. Online at <https://youtu.be/8MevPOb2MqE>

Journal Publications

Combinatorial Algorithms

- M. C. Loui, Weighted derivation trees, *Communications of the ACM*, vol. 19, no. 9, pp. 509–513, September 1976. Second Prize in Forsythe Student Paper Competition, Association for Computing Machinery, 1976
- E. L. Lloyd and M. C. Loui, On the worst case performance of buddy systems, *Acta Informatica*, vol. 22, no. 4, pp. 451–473, October 1985.
- P. A. Peterson and M. C. Loui, The general maximum matching algorithm of Micali and Vazirani, *Algorithmica*, vol. 3, no. 4, pp. 511–533, 1988.
- B. Das and M. C. Loui, Reconstructing a minimum spanning tree after deletion of any node, *Algorithmica*, vol. 31, no. 4, pp. 530–547, 2001.
- S. Pae and M. C. Loui, Randomizing functions: simulation of a discrete probability distribution using a source of unknown distribution, *IEEE Transactions on Information Theory*, vol. 52, no. 11, pp. 4965–4976, November 2006.

Computational Complexity Theory

- M. C. Loui, A note on the pebble game, *Information Processing Letters*, vol. 11, no. 1, pp. 24–26, 29 August 1980.
- L. M. Adleman and M. C. Loui, Space-bounded simulation of multitape Turing machines, *Mathematical Systems Theory*, vol. 14, no. 3, pp. 215–222, July 1981.
- M. C. Loui, A space bound for one-tape multidimensional Turing machines, *Theoretical Computer Science*, vol. 15, no. 3, pp. 311–320, September 1981.
- M. C. Loui, Simulations among multidimensional Turing machines, *Theoretical Computer Science*, vol. 21, no. 2, pp. 145–161, November 1982. Preliminary version: *Proceedings of the Twenty-Second Annual Symposium on Foundations of Computer Science*, Nashville, Tenn., 1981, pp. 58–67.
- M. C. Loui, Optimal dynamic embedding of trees into arrays, *SIAM Journal on Computing*, vol. 12, no. 3, pp. 463–472, August 1983.
- M. C. Loui, Minimizing access pointers into trees and arrays, *Journal of Computer and System Sciences*, vol. 28, no. 3, pp. 359–378, June 1984.
- J. Y. Halpern, M. C. Loui, A. R. Meyer, and D. Weise, On time versus space III, *Mathematical Systems Theory*, vol. 19, no. 1, pp. 13–28, 1986.
- A. S. Hodel and M. C. Loui, Optimal dynamic embedding of X-trees into arrays, *Theoretical Computer Science*, vol. 59, no. 3, pp. 259–276, August 1988. Preliminary version: *Proceedings of the Twentieth Annual Conference on Information Sciences and Systems*, Princeton, N.J., 1986, pp. 322–327.
- J. L. Trahan, M. C. Loui, and V. Ramachandran, Multiplication, division, and shift instructions in parallel random access machines, *Theoretical Computer Science*, vol. 100, no. 1, pp. 1–44, 22 June 1992.

- Preliminary version: *Proceedings of the Twenty-Second Annual Conference on Information Sciences and Systems*, Princeton, N.J., 1988, pp. 126–130.
- M. C. Loui and D. R. Luginbuhl, The complexity of on-line simulations between multidimensional Turing machines and random access machines, *Mathematical Systems Theory*, vol. 25, no. 4, pp. 293–308, 1992.
- M. C. Loui and D. R. Luginbuhl, Optimal on-line simulations of tree machines by random access machines, *SIAM Journal on Computing*, vol. 21, no. 5, pp. 959–971, October 1992.
- D. R. Luginbuhl and M. C. Loui, Hierarchies and space measures for pointer machines, *Information and Computation*, vol. 104, no. 2, pp. 253–270, June 1993.
- J. L. Trahan, V. Ramachandran, and M. C. Loui, Parallel random access machines with both multiplication and shifts, *Information and Computation*, vol. 110, no. 1, pp. 96–118, April 1994. Preliminary version: The power of parallel random access machines with augmented instruction sets, *Proceedings, Structure in Complexity Theory: Fourth Annual Conference*, Eugene, Ore., pp. 97–103, 1989.
- M. C. Loui, Computational complexity theory, *Computing Surveys*, vol. 28, no. 1, pp. 47–49, March 1996.

Education

- M. C. Loui, Computer science is an engineering discipline, *Engineering Education*, vol. 78, no. 3, pp. 175–178, December 1987.
- M. C. Loui, The case for assembly language programming, *IEEE Transactions on Education*, vol. 31, no. 3, pp. 160–164, August 1988.
- R. B. Uribe, L. Haken, and M. C. Loui, A design laboratory in electrical and computer engineering for freshmen, *IEEE Transactions on Education*, vol. 37, no. 2, pp. 194–202, May 1994.
- M. C. Loui, Computer engineering at the University of Illinois at Urbana-Champaign, *IEEE Transactions on Education*, vol. 37, no. 3, pp. 322–327, August 1994.
- M. C. Loui, Computer science is a new engineering discipline, *Computing Surveys*, vol. 27, no. 1, pp. 31–32, March 1995.
- C. Glagola, M. Kam, M. C. Loui, and C. Whitbeck, Teaching ethics in engineering and computer science: a panel discussion, *Science and Engineering Ethics*, vol. 3, no. 4, pp. 463–480, October 1997. Preliminary version: Mini-conference on Ethics in Engineering and Computing, Sixth Annual Meeting of the Association for Practical and Professional Ethics, Washington, D.C., 1997.
- M. C. Loui, Fieldwork and cooperative learning in professional ethics, *Teaching Philosophy*, vol. 23, no. 2, pp. 139–156, June 2000. Preliminary version: Eighth Annual Meeting of the Association for Practical and Professional Ethics, Washington, D.C., 1999; International Conference on Ethics in Engineering and Computer Science, Cleveland, Ohio, 1999.
- M. C. Loui, Educational technologies and the teaching of ethics in science and engineering, *Science and Engineering Ethics*, vol. 11, no. 3, pp. 435–446, July 2005. Preliminary version: Twelfth Annual Meeting of the Association for Practical and Professional Ethics, Charlotte, N.C., 2003.
- M. C. Loui, Ethics and the development of professional identities of engineering students, *Journal of Engineering Education*, vol. 94, no. 4, pp. 383–390, October 2005. Preliminary version: *Proceedings of the Thirty-Fourth ASEE/IEEE Frontiers in Education Conference*, Savannah, Ga., October 20–23, 2004, pp. T2E-11 to T2E-12.
- M. C. Loui, Assessment of an engineering ethics video: *Incident at Morales*, *Journal of Engineering Education*, vol. 95, no. 1, pp. 85–91, January 2006. Preliminary version: *Proceedings of the Thirty-Fifth ASEE/IEEE Frontiers in Education Conference*, Indianapolis, Ind., October 19–22, 2005, pp. S3D-19 to S3D-20.
- M. C. Loui, What can students learn from an extended role-play simulation on technology and society? *Bulletin of Science, Technology & Society*, vol. 29, no. 1, pp. 37–47, February 2009. Preliminary version: *Proceedings of the Thirty-Eighth ASEE/IEEE Frontiers in Education Conference*, Saratoga Springs, N.Y., October 22–25, 2008, pp. T3F-1 to T3F-2. (441 accepted / 783 submitted)

- G. Hashemian and M. C. Loui, Can instruction in engineering ethics change students' feelings about professional responsibility? *Science and Engineering Ethics*, vol. 16, no. 1, pp. 201–215, March 2010. Preliminary version: Engineering courage: from “not my business” to positive responsibility, *Proceedings of the Thirty-Fifth ASEE/IEEE Frontiers in Education Conference*, Indianapolis, Ind., October 19–22, 2005, pp. S3D-17 to S3D-18.
- K. Goldman, P. Gross, C. Heeren, G. Herman, L. Kaczmarczyk, M. C. Loui, and C. Zilles, Setting the scope of concept inventories for introductory computing subjects, *ACM Transactions on Computing Education*, vol. 10, no. 2, pp. 5:1–29, June 2010. Preliminary version: Identifying important and difficult concepts in introductory computing courses using a Delphi process, *Proceedings of the Thirty-Ninth ACM Technical Symposium on Computer Science Education*, Portland, Ore., March 12–15, 2008, pp. 256–260. (100 accepted / 324 submitted)
- B. J. Brummel, C. K. Gunsalus, K. L. Anderson, and M. C. Loui, Development of role-play scenarios for teaching responsible conduct of research. *Science and Engineering Ethics*, vol. 16, no. 3, pp. 573–589, September 2010.
- S. N. Seiler, B. J. Brummel, K. L. Anderson, K. J. Kim, S. Wee, C. K. Gunsalus, and M. C. Loui, Outcomes assessment of role-play scenarios for teaching responsible conduct of research. *Accountability in Research*, vol. 18, no. 4, pp. 217–246, 2011.
- G. L. Herman, M. C. Loui, and C. Zilles, How do students misunderstand number representations? *Computer Science Education*, vol. 21, no. 3, pp. 289–312, 2011. Preliminary version: *Proceedings of the Fortieth ASEE/IEEE Frontiers in Education Conference*, Washington, D.C., October 27–30, 2010, pp. T3G-1 to T3G-2.
- G. L. Herman, M. C. Loui, and C. Zilles, Students’ misconceptions about medium-scale integrated circuits, *IEEE Transactions on Education*, vol. 54, no. 4, pp. 637–645, November 2011.
- G. L. Herman, L. Kaczmarczyk, M. C. Loui, and C. Zilles, Describing the what and why of students' difficulties in Boolean logic, *ACM Transactions on Computing Education*, vol. 12, no. 1, article 3, March 2012. Preliminary version: Proof by incomplete enumeration and other logical misconceptions. *Proceedings of the Fourth International Workshop on Computing Education Research*, Sydney, Australia, September 6–7, 2008, pp. 59–70. (16 accepted / 46 submitted)
- G. L. Herman, C. Zilles, and M. C. Loui, Flip-flops in students’ conceptions of state, *IEEE Transactions on Education*, vol. 55, no. 1, pp. 88–98, February 2012. Received honorable mention for the best paper published in the *Transactions* in 2012. Preliminary version: Work-in-progress: students’ misconceptions about state in digital systems. *Proceedings of the Thirty-Ninth ASEE/IEEE Frontiers in Education Conference*, San Antonio, Tex., October 18–21, 2009, pp. T4D-1 to T4D-2. (378 accepted / 563 submitted)
- M. C. Loui, B. A. Robbins, E. C. Johnson, and N. Venkatesan, Assessment of peer-led team learning in an engineering course for freshmen, *International Journal of Engineering Education*, vol. 29, no. 6, pp. 1440–1455, 2013. Preliminary version: M. C. Loui and B. A. Robbins, Work-in-progress: assessment of peer-led team learning in an engineering course for freshmen, *Proceedings of the Thirty-Eighth ASEE/IEEE Frontiers in Education Conference*, Saratoga Springs, N.Y., October 22–25, 2008, pp. F1F-7 to F1F-8. (441 accepted / 783 submitted). Also in *Progressions: The Peer-Led Team Learning Project Newsletter*, vol. 10, no. 1, Fall 2008. Online at <http://www.pltl.org>.
- M. W. Keefer, S. E. Wilson, H. Dankowicz, and M. C. Loui, The importance of formative assessment in science and engineering ethics education: some evidence and practical advice. *Science and Engineering Ethics*, vol. 20, no. 1, pp. 249–260, March 2014.
- N. D. Fila and M. C. Loui, Structured pairing in a first-year electrical and computer engineering laboratory: The effects on student retention, attitudes, and teamwork. *International Journal of Engineering Education*, vol. 30, no. 4, pp. 848–861, 2014. Preliminary version: Who’s driving? Structured pairs in an introductory electronics laboratory. *Proceedings of the Fortieth ASEE/IEEE Frontiers in Education Conference*, Washington, D.C., October 27–30, 2010, pp. F3C-1 to F3C-2.
- G. L. Herman, C. Zilles, and M. C. Loui, A psychometric evaluation of the Digital Logic Concept Inventory, *Computer Science Education*, vol. 24, no. 4, pp. 277–303, 2014.

- E. C. Johnson, B. A. Robbins, and M. C. Loui, What do students experience as peer leaders of learning teams? *Advances in Engineering Education*, vol. 4, no 4, paper 4, Summer 2015. Preliminary version: E. C. Johnson and M. C. Loui, Work-in-progress: How can students benefit as peer leaders of learning teams? *Proceedings of the Thirty-Ninth ASEE/IEEE Frontiers in Education Conference*, San Antonio, Tex., October 18–21, 2009, pp. M4H-1 to M4H-2. (378 accepted / 563 submitted)
- M. C. Loui and R. A. Revelo, Cooperative learning and assessment of ethics sessions in a summer undergraduate research program, *CURQ on the Web*, vol. 36, no. 1, pp. 4–10, Fall 2015.
- R. A. Revelo and M. C. Loui, A developmental model of research mentoring, *College Teaching*, vol. 64, no. 3, pp. 119–129, July 2016.
- M. C. Loui and A. Lin, Estimating a missing examination score, *Journal of College Science Teaching*, vol. 46, no. 4, pp. 18–23, March/April 2017. Preliminary version: How should we estimate a missing exam score? *Proceedings of the IEEE Frontiers in Education Conference*, El Paso, Tex., October 21–24, 2015.
- R. A. Revelo, C. Schmitz, D. Le, and M. C. Loui, Self-efficacy as a long-term outcome of a general education course on digital technologies. *IEEE Transactions on Education*, vol. 60, no. 3, pp. 198–204, August 2017.
- R. M. Reck, R. S. Sreenivas, and M. C. Loui, Evaluating the effectiveness of an affordable and portable laboratory kit for an introductory control systems course. *Advances in Engineering Education*, vol. 7, no. 3, Fall 2019. Preliminary version: Assessing an affordable and portable laboratory kit in an undergraduate control systems course, *Proceedings of the IEEE Frontiers in Education Conference*, El Paso, Tex., October 21–24, 2015.

Ethics

- E. Doss and M. C. Loui, Ethics and the privacy of electronic mail, *The Information Society*, vol. 11, no. 3, pp. 223–235, July 1995. Preliminary version: Fourth Annual Meeting of the Association for Practical and Professional Ethics, Crystal City, Va., 1995.
- W. Bakker and M. C. Loui, Can designing and selling low-quality products be ethical? *Science and Engineering Ethics*, vol. 3, no. 2, pp. 153–170, April 1997. Preliminary version: Fifth Annual Meeting of the Association for Practical and Professional Ethics, St. Louis, Mo., 1996.
- M. C. Loui, Commentary on “Better communication between engineers and managers: some ways to prevent many ethically hard choices” (Davis), *Science and Engineering Ethics*, vol. 3, no. 2, pp. 215–216, April 1997.
- D. Lin and M. C. Loui, Taking the byte out of cookies: privacy, consent, and the Web, *Computers and Society*, vol. 28, no. 2, pp. 39–51, June 1998. Preliminary version: Seventh Annual Meeting of the Association for Practical and Professional Ethics, Dallas, Tex., 1998.
- M. C. Loui, The engineer’s responsibility for quality, *Science and Engineering Ethics*, vol. 4, no. 3, pp. 347–350, July 1998. Reprinted in *Chemtech*, vol. 29, no. 1, pp. 7–8, January 1999.
- M. C. Loui, Commentary on “The greening of engineers: a cross-cultural experience” (Ansari), *Science and Engineering Ethics*, vol. 7, no. 1, pp. 125–127, January 2001.
- M. C. Loui, Seven ways to plagiarize: handling real allegations of research misconduct, *Science and Engineering Ethics*, vol. 8, no. 4, pp. 529–539, October 2002. Preliminary version: Eleventh Annual Meeting of the Association for Practical and Professional Ethics, Cincinnati, Ohio, 2002.
- M. C. Loui, Commentary on “An analytical hierarchy process model to apportion co-author responsibility” (Sheskin), *Science and Engineering Ethics*, vol. 12, no. 3, pp. 567–570, July 2006.
- C. Graeff and M. C. Loui, Ethical implications of technical limitations in GIS. *IEEE Technology and Society Magazine*, vol. 27, no. 4, pp. 27–36, Winter 2008. Preliminary version: IEEE International Symposium on Technology and Society, New York, N.Y., 2006.
- D. J. Kijowski, H. Dankowicz, and M. C. Loui, Responsible conduct of research with computational models and simulations. *Science and Engineering Ethics*, vol. 19, no. 1, pp. 63–81, March 2013.

Parallel and Distributed Computation

- M. C. Loui, The complexity of sorting on distributed systems, *Information and Control*, vol. 60, no. 1, pp. 70–85, January 1984. Preliminary version: *Proceedings of the 1984 Conference on Information Sciences and Systems*, Princeton, N.J., pp. 318–322.
- M. C. Loui, T. A. Matsushita, and D. B. West, Election in a complete network with a sense of direction, *Information Processing Letters*, vol. 22, no. 4, pp. 185–187, 17 April 1986. Corrigendum: *Information Processing Letters*, vol. 28, no. 6, p. 327, 29 August 1988. Preliminary version: *Proceedings of the Nineteenth Annual Conference on Information Sciences and Systems*, Baltimore, Md., 1985, p. 316.
- A. M. Schwartz and M. C. Loui, Dictionary machines on cube-class networks, *IEEE Transactions on Computers*, vol. C-36, no. 1, pp. 100–105, January 1987. Preliminary version: *Proceedings of the 1985 International Conference on Parallel Processing*, St. Charles, Ill., pp. 210–216.
- M. M. Wu and M. C. Loui, An efficient distributed algorithm for maximum matching in general graphs, *Algorithmica*, vol. 5, no. 3, pp. 383–406, 1990.
- M. C. Loui and M. A. Sohoni, An algorithm for load balancing in multiprocessor systems, *Information Processing Letters*, vol. 35, no. 5, pp. 223–228, 28 August 1990.
- M. M. Wu and M. C. Loui, Modeling robust asynchronous communication protocols with finite-state machines, *IEEE Transactions on Communications*, vol. 41, no. 3, pp. 492–500, March 1993.

Research Policy

- A. Condon, F. Fich, G. N. Frederickson, A. Goldberg, D. S. Johnson, M. C. Loui, S. Mahaney, P. Raghavan, J. E. Savage, A. Selman, and D. B. Shmoys, Strategic directions in research in theory of computing, *Computing Surveys*, vol. 28, no. 4, pp. 575–590, December 1996. Also *SIGACT News*, vol. 28, no. 3, pp. 75–93, September 1997.

Conference Publications¹

- M. C. Loui and A. S. Willsky, Efficient multiplication in semisimple algebras, *Proceedings of the 1978 Conference on Information Sciences and Systems*, Baltimore, Md., pp. 61–65.
- E. Gafni, M. C. Loui, P. Tiwari, D. B. West, and S. Zaks, Lower bounds on common knowledge in distributed algorithms, in *Distributed Algorithms on Graphs: Proceedings of the First International Workshop on Distributed Algorithms on Graphs*, ed. E. Gafni and N. Santoro, Ottawa, Canada, 1985, Carleton University Press, 1986, pp. 49–67.
- P. Tiwari and M. C. Loui, Simulation of chaotic algorithms by token algorithms, in *Distributed Algorithms on Graphs: Proceedings of the First International Workshop on Distributed Algorithms on Graphs*, ed. E. Gafni and N. Santoro, Ottawa, Canada, 1985, Carleton University Press, 1986, pp. 143–152.
- J. E. Burns, R. I. Cruz, and M. C. Loui, Generalized agreement between concurrent fail-stop processes, *Proceedings of the Seventh International Workshop on Distributed Algorithms*, Lausanne, Switzerland, 1993, Lecture Notes in Computer Science, vol. 725, ed. A. Schiper, Springer-Verlag, Berlin, pp. 84–98.
- N. M. Amato and M. C. Loui, Checking linked data structures, *Proceedings of the Twenty-Fourth International Symposium on Fault-Tolerant Computing*, Austin, Tex., 1994, pp. 164–173.
- S. P. Nichols, J. H. Smith, and M. C. Loui, Incident at Morales: a video/DVD case study in professional responsibility, *Proceedings of the 2003 ASEE Annual Conference and Exposition*, Nashville, Tenn., June 22–25, 2003, CD-ROM.
- M. C. Loui, E. W. LeFevre, S. P. Nichols, C. M. Skooglund, J. H. Smith, F. Suppe, P. E. Ulmer, and V. Weil, Incident at Morales: an engineering ethics video, *Proceedings of the Thirty-Third ASEE/IEEE Frontiers in Education Conference*, Westminster, Colo., November 5–8, 2003, pp. S1H-1 to S1H-2.

¹ This list excludes preliminary versions of journal publications.

- R. Chmiel and M. C. Loui, An integrated approach to instruction in debugging computer programs, *Proceedings of the Thirty-Third ASEE/IEEE Frontiers in Education Conference*, Westminster, Colo., November 5–8, 2003, pp. S4C-1 to S4C-6.
- R. Chmiel and M. C. Loui, Debugging: from novice to expert, *Proceedings of the Thirty-Fifth ACM Technical Symposium on Computer Science Education*, Norfolk, Va., March 3–7, 2004, pp. 17–21. (90 accepted / 320 submitted)
- S. Pae and M. C. Loui, Optimal random number generation from a biased coin, *Proceedings of the Sixteenth Annual ACM-SIAM Symposium on Discrete Algorithms*, Vancouver, Canada, January 23–25, 2005, pp. 1079–1088. (135 accepted / 487 submitted)
- I. Liao and M. C. Loui, Work-in-progress: do women score lower than men on computer engineering exams? *Proceedings of the Thirty-Fifth ASEE/IEEE Frontiers in Education Conference*, Indianapolis, Ind., October 19–22, 2005, pp. T3D-7 to T3D-8.
- J. T. Longino, M. Loui, and C. Zilles, Student misconceptions in an introductory logic design course, *Proceedings of the 2006 ASEE Annual Conference and Exposition*, Chicago, Ill., June 18–21, 2006, CD-ROM.
- D. E. Goldberg, A. C. Cangellaris, M. C. Loui, R. L. Price, and J. B. Elliott-Litchfield, iFoundry: engineering curriculum reform without tears, *Proceedings of the 2008 ASEE Annual Conference and Exposition*, Pittsburgh, Pa., June 22–25, 2008, CD-ROM.
- K. Shruti and M. C. Loui, Ethical issues in computational modeling and simulation, *Eighteenth Annual Meeting of the Association for Practical and Professional Ethics*, Cincinnati, Oh., March 5–8, 2009.
- S. N. Seiler, M. C. Loui, K. L. Kristich, K. J. Kim, C. K. Gunsalus, and B. J. Brummel, Role-play scenarios for RCR: assessment of outcomes, *2009 Research Conference on Research Integrity*, Niagra Falls, N.Y., May 15–17, 2009.
- J. L. Wang and M. C. Loui, Privacy and ethical issues in location-based tracking systems, *IEEE International Symposium on Technology and Society*, Phoenix, Ariz., May 18–20, 2009, pp. 1–4.
- G. L. Herman, M. C. Loui, and C. Zilles, Creating the digital logic concept inventory, *Proceedings of the Forty-First ACM Technical Symposium on Computer Science Education*, Milwaukee, Wisc., March 10–13, 2010, pp. 102–106. (103 accepted / 303 submitted)
- M. C. Loui, J. H. Smith, J. R. Herkert, and S. P. Nichols, *Henry's Daughters*: A new engineering ethics movie, *Proceedings of the Fortieth ASEE/IEEE Frontiers in Education Conference*, Washington, D.C., October 27–30, 2010, pp. T4B-1 to T4B-3. (Special session)
- S. Wee, R. M. Cordova-Wentling, R. F. Korte, S. M. Larson, and M. C. Loui, Work-in-progress: Why many smart women leave engineering: a preliminary study of how engineering students form career goals, *Proceedings of the Fortieth ASEE/IEEE Frontiers in Education Conference*, Washington, D.C., October 27–30, 2010, pp. T2H-1 to T2H-2.
- G. L. Herman and M. C. Loui, Administering a digital logic concept inventory at multiple institutions, *Proceedings of the 2011 American Society for Engineering Education Annual Conference and Exposition*, Vancouver, B.C., June 26–29, 2011, paper AC2011-1800.
- R. A. Revelo Alonso and M. C. Loui, Work-in-progress: Exploring the evolution of the mentoring relationship in a summer undergraduate research program, *Proceedings of the Forty-First ASEE/IEEE Frontiers in Education Conference*, Rapid City, S.D., October 12–15, 2011, pp. T2F-1 to T2F-2.
- C. D. Schmitz, R. A. Revelo Alonso, and M. C. Loui, Work-in-progress: Diversity harnessing in a general education course on digital information technology, *Proceedings of the Forty-First ASEE/IEEE Frontiers in Education Conference*, Rapid City, S.D., October 12–15, 2011, pp. F3D-1 to F3D-2.
- G. L. Herman and M. C. Loui, Identifying the core conceptual framework of digital logic, *Proceedings of the 2012 American Society for Engineering Education Annual Conference and Exposition*, San Antonio, Tex., June 10–13, 2012, paper AC2012-4637.
- R. A. Revelo Alonso and M. C. Loui, The long-term outcomes of an engineering course for students outside engineering, *Proceedings of the 2012 American Society for Engineering Education Annual Conference and Exposition*, San Antonio, Tex., June 10–13, 2012, paper AC2012-4913.

- W. Barnes and M. C. Loui, The adjustment experience of first-year international undergraduate students in engineering, *Proceedings of the Forty-Second ASEE/IEEE Frontiers in Education Conference*, Seattle, Wash., October 3–6, 2012, pp. 658–663.
- A. Jiang and M. C. Loui, What should I do next? How advanced engineering students decide their post-baccalaureate plans, *Proceedings of the Forty-Second ASEE/IEEE Frontiers in Education Conference*, Seattle, Wash., October 3–6, 2012, pp. 698–703.
- S. E. Wilson, M. W. Keefer, H. Dankowicz, and M. C. Loui, Responsible conduct of research in computational modeling, *Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition (IMECE2012)*, Houston, Tex., November 9–15, 2012, paper IMECE2012-88407.
- R. A. Bates and M. C. Loui, Interactive session: Including ethical discussions in your technical classes, *Proceedings of the 2013 American Society for Engineering Education Annual Conference and Exposition*, Atlanta, Ga., June 23–26, 2013, paper 8098.
- G. L. Herman, K. F. Trenshaw, M. C. Loui, K. A. Green, and D. E. Goldberg, Creating scalable reform in engineering education through low-cost intrinsic motivation course conversions of engineering courses, *Proceedings of the 2013 American Society for Engineering Education Annual Conference and Exposition*, Atlanta, Ga., June 23–26, 2013, paper 6898.
- C. D. Schmitz, M. C. Loui, and R. A. Revelo Alonso, Improving student engagement via content personalization, *Proceedings of the 2013 American Society for Engineering Education Annual Conference and Exposition*, Atlanta, Ga., June 23–26, 2013, paper 7005.
- K. F. Trenshaw, A. Hetrick, R. F. Oswald, S. L. Vostral, and M. C. Loui, Work-in-progress: Lesbian, gay, bisexual, and transgender students in engineering: climate and perceptions, *Proceedings of the Forty-Third ASEE/IEEE Frontiers in Education Conference*, Oklahoma City, Okla., October 23–26, 2013, pp. 1238–1240.
- D. S. Choi and M. C. Loui, Grit for engineering students, *Proceedings of the IEEE Frontiers in Education Conference*, El Paso, Tex., October 21–24, 2015.
- A. E. Dreyfuss, G. Saupe, W. Johnson, M. C. Loui, M. Villatoro, and J. Becvar, Getting past the first year: Retaining engineering majors, *Proceedings of the IEEE Frontiers in Education Conference*, El Paso, Tex., October 21–24, 2015.
- N. Trellinger and M. C. Loui, Learning philosophies: A glimpse into students' approaches to learning, *Proceedings of the IEEE Frontiers in Education Conference*, El Paso, Tex., October 21–24, 2015.
- S. M. Schelble, M. C. Loui, and G. M. Ferrence, Teaching ethics and professionalism through active learning and engagement. *Pacificchem 2015: International Chemical Congress of Pacific Basin Societies*, Honolulu, Hawaii, December 15–20, 2015.
- W. Tsutsui and M. C. Loui, The effectiveness of weekly supervised homework sessions in an aerospace structural mechanics course, *Proceedings of the 2016 American Society for Engineering Education Annual Conference and Exposition*, New Orleans, La., June 26–29, 2016.
- D. S. Choi, B. A. Myers, and M. C. Loui, Grit and first-year retention in engineering, *Proceedings of the IEEE Frontiers in Education Conference*, Erie, Pa., October 12–15, 2016.
- W. Tsutsui and M. C. Loui, The impact of supervised homework sessions and SAT-Math scores on academic performance in an advanced undergraduate course, *Proceedings of the IEEE Frontiers in Education Conference*, Erie, Pa., October 12–15, 2016.
- D. S. Choi and M. C. Loui, Work in progress: Designing a course to promote positive learning behaviors and dispositions for first-year engineering students, *Proceedings of the 2017 American Society for Engineering Education Annual Conference and Exposition*, Columbus, Oh., June 25–28, 2017.
- D. S. Choi, B. A. Myers, and M. C. Loui, Grit and two-year engineering retention, *Proceedings of the IEEE Frontiers in Education Conference*, Indianapolis, Ind., October 18–21, 2017.
- A. Lin and M. C. Loui, Students' perceptions of the social responsibilities of engineers, *Proceedings of the IEEE Frontiers in Education Conference*, Indianapolis, Ind., October 18–21, 2017.

- D. S. Choi and M. C. Loui, WIP: Teaching engineering students how the brain works to encourage positive learning dispositions and behaviors, *Proceedings of the 2018 American Society for Engineering Education Annual Conference and Exposition*, Salt Lake City, Utah, June 23–27, 2018.
- A. O. Brightman, N. D. Fila, J. L. Hess, A. J. Kerr, D. Kim, M. C. Loui, and C. B. Zoltowski, Applying phenomenography to develop a comprehensive understanding of ethics in engineering practice, *Proceedings of the IEEE Frontiers in Education Conference*, San Jose, Calif., October 2–5, 2018.
- D. S. Choi and M. C. Loui, Applying stages of change in an academic context to help students adopt healthy learning dispositions and behaviors, *Proceedings of the IEEE Frontiers in Education Conference*, San Jose, Calif., October 2–5, 2018.
- N. D. Fila, C. B. Zoltowski, J. L. Hess, D. Kim, A. J. Kerr, A. O. Brightman, and M. C. Loui, Work in Progress: Considering the impact on research quality of a team approach to phenomenography, *Proceedings of the 2019 American Society for Engineering Education Annual Conference and Exposition*, Tampa, Fla., June 16–19, 2019.
- A. W. Fentiman, E. A. Siverling, R. A. Soto Perez, R. A. Streveler, M. C. Loui, and K. A. Douglas, Putting discussion-based engineering education courses online, *Proceedings of the 2019 American Society for Engineering Education Annual Conference and Exposition*, Tampa, Fla., June 16–19, 2019.

Technical Reports

- M. C. Loui and K. S. Narendra, Comparison of learning automata operating in nonstationary environments, Becton Center Technical Report CT-65, Yale University, May 1975.
- M. C. Loui, Efficient multiplication in semisimple algebras, Technical Report R-700, Electronic Systems Laboratory, M.I.T., November 1976.
- M. C. Loui, Minimum register allocation is complete in polynomial space, Technical Memorandum TM-128, Laboratory for Computer Science, M.I.T., March 1979.
- M. C. Loui, The space complexity of two pebble games on trees, Technical Memorandum TM-133, Laboratory for Computer Science, M.I.T., May 1979.
- M. C. Loui and G. Bilardi, The correctness of Tison’s method for generating prime implicants, Technical Report R-952, Coordinated Science Laboratory, Univ. Illinois at Urbana-Champaign, February 1982.
- D. N. Jayasimha and M. C. Loui, The communication complexity of parallel algorithms, CSRD Report No. 629, Center for Supercomputing Research and Development, Univ. Illinois at Urbana-Champaign, January 1987.
- R. Pasquini and M. C. Loui, A fault tolerant distributed algorithm for minimum-weight spanning trees, Technical Report UILU-ENG-94-2210 (ACT-131), Coordinated Science Laboratory, Univ. Illinois at Urbana-Champaign, March 1994.
- K. Goldman, P. Gross, C. Heeren, G. Herman, L. Kaczmarczyk, M. C. Loui, and C. Zilles, Identifying important and difficult concepts in introductory computing courses using a Delphi process, Technical Report UIUCDCS-R-2007-2917, Department of Computer Science, Univ. Illinois at Urbana-Champaign, November 2007.

Other Publications

- M. C. Loui, ed., *New Engineering Educator’s Survival Kit*, American Society for Engineering Education, June 1984.
- M. C. Loui, Conference report: Midwest Consortium for Theoretical Computer Science, *SIGACT News*, vol. 18, no. 2, p. 46, Fall 1986.
- M. C. Loui, Theoretical computer science at the University of Illinois at Urbana-Champaign, *SIGACT News*, vol. 19, no. 3, pp. 37–38, Fall 1988.
- M. C. Loui, NSF Reports, *SIGACT News*, vol. 21, no. 4, pp. 11–13, Fall 1990; vol. 22, no. 1, pp. 13–14, Winter 1991; vol. 22, no. 2, pp. 18–20, Spring 1991; vol. 22, no. 3, p. 5, Summer 1991.

- M. C. Loui, Theory of computing: achievements, challenges, and opportunities, *SIGACT News*, vol. 22, no. 3, pp. 41–48, Summer 1991.
- M. C. Loui, My year at NSF, *ASEE Prism*, vol. 1, no. 10, p. 52, June 1992.
- M. C. Loui, What do we teach when we teach? Ethical values in the classroom, *The Interface*, IEEE, pp. 1–2, November 1997.
- M. C. Loui, Letter to the editor: response to the Computing Research Association’s “Best Practices Memo,” *Computing Research News*, vol. 11, no. 5, pp. 3, 20, November 1999.
- M. C. Loui, Review of *Internet Ethics* by D. Langford, *IEEE Spectrum*, vol. 37, no. 11, pp. 15–16, November 2000. Reprinted in *Ethics and Information Technology*, vol. 4, pp. 167–168, 2002.
- M. C. Loui, Review of *Collaboration, Reputation, and Ethics in American Academic Life* by G. Oakes and A. J. Vidich, *Library Quarterly*, vol. 72, no. 1, pp. 129–131, January 2002.
- M. Loui, True confessions of a volunteer novice children’s choir director, *UUMN Notes*, vol. 21, no. 1, p. 3, February/March 2003.
- M. C. Loui, Association for Computing Machinery, in *Encyclopedia of Science, Technology, and Ethics*, pp. 125–126, Thomson Gale, Farmington Hills, Mich., 2005.
- M. C. Loui, Teaching students to dream, *College Teaching*, vol. 54, no. 1, p. 58, Winter 2006.
- M. C. Loui, The development of research questions and methodology in studying the effects of ethics instruction on the development of professional identities [of] engineering students, *Annals of Research on Engineering Education*, <www.areonline.org>, vol. 2, no. 1, Winter 2006.
- M. C. Loui, Courage in the classroom, *College Teaching*, vol. 54, no. 2, p. 221, Spring 2006.
- M. C. Loui, Love, passion, and the amateur teacher, *College Teaching*, vol. 54, no. 3, p. 285, Summer 2006.
- M. C. Loui, Assessment of an engineering ethics video: Incident at Morales, *Annals of Research on Engineering Education*, <www.areonline.org>, vol. 2, no. 2, Summer 2006.
- M. C. Loui, Ethical issues in peer review and publication of engineering research, in *RCR for Engineers*, ed. J. Borenstein and P. Braunschweiger for the CITI Program at <www.citiprogram.org>, 2009.
- Reviews of five articles and four books, *Computing Reviews*, 1988–92.

Grants

- Access time versus storage space in information retrieval systems, National Science Foundation, IST-8012242, 1982–83. Replaced S. Swamy as Principal Investigator.
- Redundant data representations for efficient on-line access, National Science Foundation, MCS-8217445, 1983–85. Principal Investigator.
- New faculty incentive grant, Eastman Kodak Company, 1983–87.
- The communication complexity of graph problems on distributed systems, Office of Naval Research, N00014-85-K-0570, 1985–87. Co-Principal Investigator with D. B. West.
- Graph-theoretic methods for distributed algorithms, Office of Naval Research, N00014-85-K-0570, 1987–90. Co-Principal Investigator with D. B. West.
- Fault-tolerant concurrent access to data structures, Campus Research Board, Univ. Illinois at Urbana-Champaign, 1988–89.
- Theory of algorithms for modifying solutions to network optimization problems, Campus Research Board, Univ. Illinois at Urbana-Champaign, 1990–91.
- The computational complexity of random access machines, National Science Foundation, CCR-8922008, 1990–93. D. J. Brown replaced me as Principal Investigator when I was at NSF.
- Course development award: Engineering ethics, Program for the Study of Cultural Values and Ethics, Univ. Illinois at Urbana-Champaign, 1992.
- Theory of program checking and fault-tolerant software, National Science Foundation, CCR-9315696, 1994–96. Principal Investigator.
- Collaborative moral problem solving: a multidisciplinary approach to teaching professional ethics, with J. D. Wallace, Campus Course Development Awards, Univ. Illinois at Urbana-Champaign, 1996.

Magnets, electricity, and energy conversion (equipment for demonstrations at Yankee Ridge School), Electrical / Electronics Grants, Central Illinois Section, IEEE, 1997.

Preparing future professors through communities of scholars, Provost's Initiative on Teaching Advancement, Univ. Illinois at Urbana-Champaign, 1999.

Redesign of the computer engineering core for the new millennium, College of Engineering, Univ. Illinois at Urbana-Champaign, 2002–03.

National Institute for Engineering Ethics video project: a sequel to *Gilbane Gold*, National Science Foundation, SES-0138309, 2002–05. Co-Principal Investigator with J. H. Smith (PI), W. D. Lawson, S. P. Nichols, P. Ulmer, and V. Weil.

Development of concept inventories for computer science, National Science Foundation, DUE-0618589, 2006–09. Co-Principal Investigator with C. Zilles (PI), C. Heeren, K. J. Goldman, and L. Kaczmarczyk.

Role-play scenarios for teaching responsible conduct of research, National Science Foundation, EEC-0628814, 2006–09. Principal Investigator. Co-Principal Investigator: C. K. Gunsalus.

Assessment of student teams in a freshman engineering course, College of Engineering, Univ. Illinois at Urbana-Champaign, 2008–09. Principal Investigator.

The responsible conduct of computational modeling and research, National Science Foundation, IIS-0832843, 2008–2011. Principal Investigator. Co-Principal Investigators: H. Dankowicz, S. Wilson. Collaborator: M. Keefer.

Henry's Daughters: a new engineering ethics movie, IEEE Foundation, #2008-045, 2009–10. Project Leader. Others: J. Smith, J. Herkert, S. Nichols. Also United Engineering Foundation, 2009–10, with J. Smith, J. Herkert, S. Nichols.

Why too many smart women leave engineering: a preliminary study of how engineering students form career goals. Provost's Initiative on Teaching Advancement, Univ. Illinois at Urbana-Champaign, 2009–2010. Co-Principal Investigator with S. Larson (PI), R. Cordova-Wentling, and R. Korte.

REU site: Summer undergraduate research internship program at the Information Trust Institute, National Science Foundation, CNS-0851957, 2009–2012, Principal Investigator. Co-Principal Investigator: M. Bashir.

Development and evaluation of blended learning environments for engineering education, College of Engineering, Univ. Illinois at Urbana-Champaign, 2010–11. Co-Principal Investigator with C. Zilles (PI).

Course development award: Information technology and social change in East Asia, Center for East Asian and Pacific Studies, Univ. Illinois at Urbana-Champaign, 2010–11.

Enhancing the ECE 101 curriculum through student diversity, National Science Foundation, DUE-0942331, 2010–14, Principal Investigator. Co-Principal Investigator: C. Schmitz.

The National Professional and Research Ethics Portal, National Science Foundation, SES-1045412, 2010–12. Co-Principal Investigator with C. K. Gunsalus (PI), T. H. Broome, N. C. Burbules, and W. H. Mischo.

Can ethics instruction improve students' technical skills in computer science? National Science Foundation, DUE-1044207, 2011–13. Co-Principal Investigator with K. Miller (PI), M. S. Tracy, and K. Urban.

Why LGBT students avoid engineering: a study of the intersection of climate and perceptions, Campus Research Board, Univ. Illinois at Urbana-Champaign, 2012–13. Principal Investigator. Co-Principal Investigators: R. F. Oswald, S. L. Vostral.

Enhancing intrinsic motivation in core engineering courses, National Science Foundation, DUE-1140554, 2012–15. Principal Investigator. Co-Principal Investigators: D. E. Goldberg, G. L. Herman.

Teaching Experience

Undergraduate Courses

CHP 395 (formerly 295), Professional Ethics (*new*)

CHP 396, Technology, Communication, and Contemporary Society (*new*)
CS 210, Ethical and Professional Issues in Computing
ECE 101 (formerly 199 JL), Exploring Digital Information Technologies (*new*)
ECE 110, Introduction to Electrical and Computer Engineering (*new, for freshmen*)
ECE 290, Computer Engineering I (*digital systems, computer organization*)
ECE 316 (formerly 216), Engineering Ethics (*new*)
ECE 390 (formerly 291), Computer Engineering II (*assembly language, real time computing*)

Advanced Undergraduate/Graduate Courses

ECE 411 (formerly 312), Computer Organization and Design
ECE 428 (formerly 328), Computer Networks and Distributed Systems (*new*)
ECE 462, Logic Design (formerly 391, Switching Theory)
ECE 477 (formerly 371 MCL), Formal Methods for Software Development (*new*)

Graduate Courses

ECE 490 V, Combinatorial Algorithms Seminar
ECE 497 L, Combinatorial Optimization (*new*)
ECE 579 (formerly 479), Computational Complexity (*new*)
EOL 585 (formerly 490 TC), College Teaching and Academic Careers

Courses at Purdue

ENE 595, Engineering Education Foundations
ENE 687, Mentored Teaching in Engineering (*new*)
ENE 695, Academic Writing in Engineering Education (*new*)

New Courses Designed but Taught by Others

ECE 271 PE, Professionalism and Ethics in Engineering (*new*)
ECE 498–499 (formerly 298–299), Senior Research Project – Senior Thesis (*new*)

Presentations at Campus Faculty Retreats on Teaching and Learning

Teaching with cases, September 15, 1995
Applications of learning styles in lecturing, January 19, 1996
Groups and teams in science and engineering, February 5, 1998
From novice to expert in solving problems, February 12, 2002
Helping students develop the habit of thinking, May 17, 2002

Speeches at Annual Graduate Teacher Certificate Ceremonies

Ethical values in the classroom, April 28, 1997
Love, passion, and the amateur teacher, April 27, 1998
Courage in the classroom, April 26, 1999
Teaching students to dream, April 24, 2000

Panelist/presenter, various seminars and workshops for faculty and graduate students on teaching, advising students, and applying for grants, since 1989.

Numerous presentations on research ethics, engineering ethics, applying for graduate study, and choosing a thesis advisor, since 1994.

Leadership certificate coach for C. Fabbrini (finished 2004), E. Cartwright (2006), W. Tjen (2007), E. Echevarria (2009), M. Bai (2009), J. Lee (2009), J. Wayer (2010), E. Shah (did not complete), K. Durante (did not complete), Q. Chen (2014), A. Lin (2017), P. Patel (2018), A. Prinjha (current).

Non-thesis mentoring: graduate students A. Lee (2010–11), H. Creswell (2011–12), L. Edwards (2013–14), iMentor/GradMentor program; undergraduate B. Sturt (2011–14), Campus Honors Program.

Thesis and Project Students²

B.S. Students

- P. Everhardt, Average case behavior of distributed extrema-finding algorithms, August 1984.
- P. A. Peterson, The general maximum matching algorithm of Micali and Vazirani, August 1985.
- I. Chang, Wait-free generalized agreement protocols, June 1993.
- E. Doss, Ethics and the privacy of electronic mail, September 1993.
- R. Pasquini, A fault tolerant distributed algorithm for minimum-weight spanning trees, March 1994.
- D. Deavours, Implementing a program checker for linked lists, August 1995.
- W. Bakker, Can designing and manufacturing low-quality products be ethical? February 1996.
- G. Hashemian, Engineering courage: from “not my business” to positive responsibility, May 2005.
- E. Echevarria, Penetrating the mystery behind the fabulous fabrication of unbiased bits, August 2005.
- C. Graeff, Ethical implications of biases and errors in geographic information systems, May 2006.
- K. Shruti, Ethical issues in computational modeling and simulation, July 2008.
- B. A. Robbins, Assessment of peer-led team learning in an engineering course for freshmen, October 2008.
- J. L. Wang, Privacy and ethical issues in location-based tracking systems, May 2009.
- W. Barnes, The adjustment experience of first-year international undergraduate students in engineering, B.S. thesis, December 2010.
- C. Yoon, How to reduce illegal peer-to-peer downloading in Korea, B.S. thesis, December 2010.
- A. Jiang, What should I do next? How advanced engineering students decide their post-baccalaureate plans, B.S. Thesis, May 2012.
- A. Lin, An exploration of the climate of undergraduate engineering education programs and implications for retaining diverse students, January 2015.
- A. Lin, Cultivating dispositions towards social responsibility: Students’ perceptions of the social responsibilities of engineers, B.S. Thesis, May 2017.

M.S. Students

- T. A. Matsushita, Distributed algorithms for selection, July 1983 (Co-advisor: D. B. West).
- A. M. Schwartz, Dictionary machines for cube-class networks, March 1985.
- H. H. Abu-Amara, Memory requirements for agreement among asynchronous processes, May 1985.
- J. L. Trahan, Simulations among multidimensional iterative arrays, iterative tree automata, and alternating Turing machines, January 1986.
- A. S. Hodel, Optimal dynamic embedding of X-trees into arrays, May 1986.
- M. M. Wu, An efficient distributed algorithm for maximum matching in general graphs, January 1987.
- M. L. Prastein, Precedence-constrained scheduling with minimum time and communication, May 1987.
- M. J. Lloyd, Token execution strategies for distributed algorithms: simulation studies, August 1987.
- M. A. Sohoni, Scaling of linear programs, May 1988.
- G. K. Harms, The application of competitive bidding and genetic algorithms to the scheduling and management of computer integrated manufacturing systems, January 1990 (Co-advisor: M. J. Shaw).
- K. J. Rabourn, Message efficient distributed deadlock detection, May 1990.
- R. I. Cruz, Generalized agreement between concurrent fail-stop processes, August 1992.
- K-H. Mak, Speedup of deterministic multi-dimensional Turing machines by alternating multi-dimensional Turing machines, August 1992.
- D. J. Lin, Taking the byte out of cookies: privacy, consent, and the Web, April 1998.
- J. M. Overturf, An efficient distributed algorithm for leader election in rings, July 1999.
- S. Thite, Optimum binary search trees on the hierarchical memory model, November 2000.
- R. J. Chmiel, An integrated approach to instruction in debugging computer programs, April 2004.
- I. Liao, Do women score lower than men on computer engineering examinations? May 2005.

² Many theses have led to journal publications on which the student was the sole author.

- J. T. Longino, Boolean blunders: identification and assessment of student misconceptions in a digital logic course, July 2006 (Co-advisor: C. Zilles).
- N. D. Fila, Who's driving? Structured pairing in an electronics laboratory, December 2010.
- D. J. Kijowski, Responsible conduct of research with computational models and simulations, December 2010 (Co-advisor: H. Dankowicz).
- T. J. Eagle, A survey of university teaching practices and perceptions of compressed courses, December 2012.
- B. E. Faulkner, Effect of assertion headings and expandable examples in online engineering textbooks on student performance and satisfaction, May 2015 (Co-advisor: G. Herman).

Ph.D. Students and Their Affiliations

- P. Tiwari, The communication complexity of distributed computing and a parallel algorithm for polynomial roots, July 1986. IBM T. J. Watson Research Center, 1986–90, 1994–99; University of Wisconsin–Madison, 1990–93. C-Cube Microsystems, 1999–2001; Multimedia Communication Systems, 2002–04; Indian Institute of Technology Delhi, since 2004.
- D. N. Jayasimha, Communication and synchronization in parallel algorithms, August 1988 (Co-advisor: D. H. Lawrie). Ohio State University, 1988–96; Intel Corporation, Santa Clara, Calif., since 1996.
- H. H. Abu-Amara, Fault-tolerant distributed algorithms for agreement and election, August 1988. IBM T. J. Watson Research Center, 1988–89; Texas A&M University, 1989–95; Bell-Northern Research/Nortel, Dallas, 1996–2000; Yotta Networks, Richardson, Tex., 2000–02; Samsung Electronics; Motorola; Booz Allen Hamilton, since 2009.
- J. L. Trahan, Instruction sets for parallel random access machines, August 1988. Louisiana State University, since 1988.
- D. R. Luginbuhl, Computational complexity of random access models, January 1990. Air Force Institute of Technology, 1990–93; Air Force Office of Scientific Research, 1994–97, 2006–11; U.S. Department of Energy, 1997–2001; Western Carolina University, 2001–06; Air Force Research Laboratory, 2011–19; Samford University, since 2019.
- M. M. Wu, Asynchronous algorithms for shared memory machines, January 1992. Kuck and Associates, Champaign, Ill., 1992–95; AT&T Bell Laboratories/Lucent Technologies, Naperville, Ill., since 1995.
- D. S. Atkinson, Scaling and interior point methods in optimization, July 1992 (Co-advisor: P. Vaidya). University of Illinois at Urbana-Champaign, 1992–93; Western Kentucky University, 1993–95; American States Insurance, Indianapolis, since 1995.
- K-H. Mak, The power of parallel time, May 1995. Nominated by the Department of Computer Science for the ACM Distinguished Dissertation Award.
- B. N. Das, Spanning tree algorithms for connectivity and routing in communication networks, August 1997. Lucent Technologies, Naperville, Ill., since 1997.
- S. Pae, Random number generation using a biased source, May 2005. Korea Institute for Advanced Study, 2005–07; Hongik University, since 2007.
- M. Rosulek, The structure of secure multi-party computation, June 2009 (Co-advisor: M. Prabhakaran). University of Montana, 2009–13; Oregon State University, since 2013.
- G. L. Herman, The development of a digital logic concept inventory, May 2011 (Co-advisor: C. Zilles). University of Illinois at Urbana-Champaign, since 2011.
- J. K. Knorek, Faculty teaching climate: scale construction and initial validation, August 2012. (Committee chair; research advisor: J. Rounds). U.S. Navy, since 2012.
- K. F. Trenshaw, Improving motivation and engagement in core engineering courses with student teams, December 2013. Brown University, 2014–17; University of Rochester, since 2017.
- R. A. Revelo Alonso, Engineering *familia*: The role of a professional organization in the development of engineering identities of Latina/o undergraduates, May 2015. University of Illinois at Chicago, since 2015. First Place, Outstanding Dissertation Competition, American Association of Hispanics in Higher Education, 2017.

- R. M. Reck, Experiential learning in control systems laboratories and engineering project management, May 2016 (Co-advisor: R. Sreenivas). Kettering University, since 2016.
- D. S. Choi, Grit, mindsets, and persistence of engineering students. July 2018. University of Illinois at Urbana-Champaign, since 2018.
- S. Z. Atiq, Emotions experienced by first-year engineering students during programming tasks (Co-advisor: J. DeBoer), June 2019. Ohio State University, since 2019.
- B. Babajide, Onboarding early-career engineers: Knowledge & skill acquisition in rotational programs (Co-advisor: W. Oakes), March 2020. Android Industries, since 2018.

Current Student

- D. Kim, Ph.D. thesis on ethics and social responsibility in engineering (Co-advisor: B. Jesiek)

Professional Activities

Journals

- Editor, Theory of Computation category, *Computing Reviews*, 1987–97.
- Member, Board of Editors, *Information and Computation*, 1997–2008.
- Guest editor, *Science and Engineering Ethics*, October 1997, April 1998.
- Member, Editorial Board, *Accountability in Research*, since 1999.
- Member, Editorial Board, *Teaching Ethics*, 2002–08.
- Member, Editorial Board, *College Teaching*, since 2005; Executive Editor, 2006–12.
- Guest editor, *IEEE Technology and Society Magazine*, Summer 2012.
- Editor, *Journal of Engineering Education*, 2012–17.

Professional Organizations

- Member, Long Range Planning Committee, ACM Special Interest Group on Algorithms and Computation Theory, 1993–97.
- Organizer, successful nomination of J. Y. Halpern and Y. Moses for the ACM-SIGACT/EATCS Gödel Prize for the best paper in theoretical computer science published in the last six years, 1997.
- Member at Large, Executive Board, National Institute for Engineering Ethics, 1997–2008; Distinguished Life Member, since 2008.
- Member, Graduate Standards Committee, Midwestern Association of Graduate Schools, 1998–2001.
- Organizer, successful nomination of A. L. Selman for the ACM-SIGACT Distinguished Service Award, 2002.
- Member, Board of Governors, IEEE Society on Social Implications of Technology, 2002–04, 2005–07.
- Chair, Publications Committee, 2003–07. Chaired search committees for editor of *IEEE Technology and Society Magazine*, 2003, 2006.
- Member, Engineering Ethics Constituent Committee, American Society for Engineering Education, 2003.
- Distinguished Lecturer, IEEE Society on Social Implications of Technology, 2008–10.
- Organizer, successful nomination of C. Zilles for the IEEE Education Society Mac Van Valkenburg Early Career Teaching Award, 2010.
- Panelist, Investigation of an allegation of plagiarism, *IEEE Transactions on Education*, February 2011.
- Member, Selection Committee, Outstanding Undergraduate Researchers Awards, Computing Research Association, Fall 2011.
- Member, IEEE Ethics and Member Conduct Committee, 2012–14.
- Engineering Division representative, Nominations Committee, Council on Undergraduate Research, 2014–16.
- Chair, Ethics Committee, American Educational Research Association, since 2018.
- Member, Task Force on Ethics, American Society for Engineering Education, 2018–19.
- Chair, Search Committee for the Editor-in-Chief of *Advances in Engineering Education*, American Society for Engineering Education, 2019–20.

Current member of American Educational Research Association, American Society for Engineering Education (Fellow), Association for Computing Machinery, Association for Practical and Professional Ethics, Council on Undergraduate Research, Institute of Electrical and Electronics Engineers (Fellow), Sigma Xi, Society for Ethics Across the Curriculum.

Advisory Boards

Member, Advisory Board, Online Ethics Center for Engineering and Science, 1995–2007.

Member, Advisory Group, Online Ethics Center, National Academy of Engineering, since 2007.

Chair, Advisory Board, CAREER: Modeling the longitudinal career pathways of engineering doctorates by gender, race/ethnicity, and discipline, J. Main, PI, Purdue University, National Science Foundation award 1653378, since 2017.

Member, Advisory Board, *Advances in Engineering Education*, since 2018.

Member, External Advisory Board, The AGEP Engineering Alliance: A model to advance historically underrepresented minority postdoctoral scholars and early career faculty in engineering, C. Haynes, PI, Georgia Tech, National Science Foundation award 1821298, since 2019.

Member, Formative External Evaluation Panel, Empowering faculty to cultivate a culture of ethics in engineering, M. Kalichman, PI, University of California, San Diego, National Science Foundation award 1835029, since 2019.

Member, Editorial Board, *ASEE Prism*, since 2019.

Invited Presentations

Invited presenter, The engineer's responsibility for quality, Engineering Foundation Conference on Ethics for Science and Engineering Based International Industries, Durham, N.C., September 16, 1997.

Keynote speaker, How to succeed in teaching ethics without really trying, Conference on Integrating Ethics into Technical Education, Raritan Valley Community College, Somerville, N.J., June 3, 1999.

Invited presenter, Ethics and the Internet: emerging issues, Conference on Ethics and Social Responsibility in Engineering and Technology, Coeur d'Alene, Idaho, May 31–June 1, 2001.

Invited presenter, Professional responsibility for software quality, Conference on Ethics and Social Responsibility in Engineering and Technology, Coeur d'Alene, Idaho, May 23–24, 2002.

Invited presenter, Educational technologies and the teaching of ethics in science and engineering, Web-based Ethics Curriculum Workshop, Bloomington, Ind., June 10–11, 2002.

Invited panelist, Internet ethics and research collaborations between industry and universities, Internet2 Meeting, Los Angeles, Calif., October 28–30, 2002.

Invited presenter, Educational technologies and the teaching of ethics in science and engineering, Twelfth Annual Meeting of the Association for Practical and Professional Ethics, Charlotte, N.C., February 27–March 1, 2003.

Invited presenter, Responsible Conduct of Research workshop, Northern Illinois University, DeKalb, Ill., April 9, 2004.

Visiting scholar, six lectures on various topics, Western Carolina University, Cullowhee, N.C., February 1–3, 2006.

Invited participant, Moments of inertia: toward an agenda for sociological research on why engineering professors resist changes in pedagogy and curriculum, Workshop on Social Dynamics of Campus Change: Creating an Interdisciplinary Research Agenda, National Academy of Engineering, Washington, D.C., April 26–27, 2006.

Invited panelist, Special Session on Research Ethics, Federated Computing Research Conference, San Diego, Calif., June 8–16, 2007.

IEEE distinguished lecturer, Authorship and plagiarism, St. Louis Section meeting of the IEEE Education Society, Southern Illinois University, Carbondale, Ill., January 23, 2009.

Invited speaker, Ethics and social responsibility for scientists and engineers, Friday Forum Lecture Series, University YMCA, Champaign, Ill., February 6, 2009.

Invited presenter, Using role-playing case studies, Sixteenth Annual Teaching Research Ethics Workshop, Indiana University, Bloomington, Ind., May 14, 2009.

IEEE distinguished lecturer, Professional ethics in engineering, Department of Electrical Engineering, University of Hawaii, Honolulu, Hawaii, March 22, 2011.

Plenary speaker, The National Center for Professional and Research Ethics presents Ethics CORE, Thirteenth International Conference on Ethics Across the Curriculum, St. Louis, Mo., November 4, 2011.

William & Patricia Stacy Engineering Ethics Lectures: Professional ethics in engineering, Ethics in scientific research, Department of Electrical and Computer Engineering, University of Kentucky, Lexington, Ky., April 21–22, 2011; March 8–9, 2012.

Invited lecture, CS 195, Social Implications of Computers, University of California, Berkeley, March 5, 2013.

Keynote speaker, The top ten mistakes that graduate students make, Graduate Student Appreciation Week, Purdue Graduate Student Government, West Lafayette, Ind., April 2, 2013.

Invited lecture, Ethics in scientific research: Video vignettes, University of Illinois at Chicago College of Pharmacy, Rockford, Ill., September 17, 2014.

Invited speaker, Scholarly publication: Responsibilities of authors and reviewers, Responsible conduct of research workshop, Howard University, October 8, 2014.

Invited speaker, Getting published in journals, Webinar for postdocs in the CIC AGEP Professional Advancement Initiative, February 8, 2016.

Plenary speaker, Publishing on engineering education in journals: From fundamental to translational research, ASEE Midwest Section Conference, Manhattan, Kansas, September 26, 2016.

Invited panelist, Telling it like it was: Pioneers in engineering ethics education, Twenty-Sixth Annual Conference of the Association for Practical and Professional Ethics, Dallas, Tex., February 23–26, 2017.

Invited lectures, Daniels Fund Faculty Fellows Program, Colorado School of Mines, Engineering ethics and engineering education, April 4, 2017, and How to succeed in teaching ethics without really trying, April 5, 2017.

Invited participant, Toward a STEM DBER alliance (DBER-A): Building an interdisciplinary education research community across disciplines, American Educational Research Association Annual Meeting, San Antonio, Tex., April 27 – May 1, 2017.

Invited panelist, What are literacy and equity in the context of engineering? Literacies in Engineering for Access and Participation Conference, San Antonio, Tex., May 2–3, 2017.

Invited speaker, Scholarship of teaching and learning workshop, University of Illinois at Chicago, May 11, 2017.

Invited panelist, What education researchers want you to know about teaching and classroom research, American Society for Engineering Education Annual Conference, Columbus, Oh., June 25–28, 2017.

Invited panelist, Adjudication of plagiarism cases, Plagiarism: The Identification, Processing, Prevention, and Cultural Context of Plagiarism, Research Integrity Officers Conference, Indianapolis, Ind., April 3–5, 2018.

Invited panelist, Plagiarism policies of journals and publishers, Plagiarism: The Identification, Processing, Prevention, and Cultural Context of Plagiarism, Research Integrity Officers Conference, Indianapolis, Ind., April 3–5, 2018.

Invited speaker, How to choose an academic journal, Illinois-Indiana Section Meeting, American Society for Engineering Education, West Lafayette, Ind., April 7, 2018.

Invited discussant, Indicators for monitoring undergraduate STEM education, American Educational Research Association Annual Meeting, New York, N.Y., April 13–17, 2018.

Invited speaker, Engineering ethics from university studies through professional practice, American Educational Research Association Annual Meeting, New York, N.Y., April 13–17, 2018.

Invited speaker, Entering engineering education research, with B. Ahn, Iowa State University, December 17, 2018.

Invited speaker, A gentle introduction to educational assessment in research integrity, RCR Workshop, Association for Practical and Professional Ethics Annual Conference, Baltimore, Md. February 28, 2019.

Invited speaker, Professional responsibility and the scholarship of teaching and learning (public lecture), How to succeed in teaching engineering ethics without really trying (workshop), California State University, Bakersfield, March 7–8, 2019.

Invited speaker, Data sharing workshop, American Educational Research Association Annual Meeting, Toronto, Ont., April 5–9, 2019.

Invited discussant, Fostering transparency in education research—Building upon a 2019 special education report, American Educational Research Association Annual Meeting, Toronto, Ont., April 5–9, 2019.

Invited presenter, Working ethics into the conversation: Professional responsibility in engineering, Webinar, Online Ethics Center, National Academy of Engineering, February 25, 2020.

Other recent talks: Michigan State University, September 2015; Ohio State University, April 2016; University of Texas at Austin, September 2016; University of Louisville, March 2017; Oregon State University, May 2018; Arizona State University, January 2020; Florida International University, January 2020; Indiana University Purdue University Indianapolis, February 2020.

Conferences and Workshops

Organizer, Third Midwest Theory of Computation Day, September 10, 1981.

Conference co-chair, Twenty-Fourth and Twenty-Fifth Annual Allerton Conferences on Communication, Control, and Computing, Monticello, Ill., October 1–3, 1986, and September 30 – October 2, 1987.

Program Committee, 1986 Fall Joint Computer Conference, Dallas, Tex., November 1986.

Panelist, Computer science vs. computer engineering, 1989 Annual Meeting of the Association of Computer Science and Computer Engineering Chairs, Louisville, Ky., February 21, 1989.

Panelist, Is computer science an engineering discipline? Computing Research Board Department Chairs' Program, ACM Computer Science Conference, Washington, D.C., February 21, 1990.

Organizer, session on concurrent and distributed computation, Twenty-Eighth Annual Allerton Conference on Communication, Control, and Computing, Monticello, Ill., October 4, 1990.

Program Committee, Second Workshop on Algorithms and Data Structures, Ottawa, Canada, August 1991.

Organizer and moderator, session on tenure and promotion, New Engineering Educators Division, 1992 Annual ASEE Conference, Toledo, Ohio, June 23, 1992.

Panelist, Evaluation of the GRE advanced test in computer science, Snowbird Conference '92, Computing Research Association, Snowbird, Utah, July 14, 1992.

Presenter, workshop on using motivation and cognition strategies to improve lectures, 1993 Annual ASEE Conference, Urbana, Ill., June 22, 1993.

Organizer and presenter, Workshop on Effective Teaching in Computer Science and Engineering, Computing Research Association, Snowbird, Utah, June 7–9, 1995. This workshop drew 30 participants who had recently begun academic careers. Sessions on learning styles, effective lecturing, advising thesis students, instructional objectives, creative problem solving in groups, and evaluation.

Program Committee, Fourth Workshop on Algorithms and Data Structures, Ottawa, Canada, August 1995.

Chair, Working Group on Theory of Computing, ACM Workshop on Strategic Directions in Computing Research, Cambridge, Mass., June 14–15, 1996.

Chair, Organizing Committee, Mini-conference on Ethics in Engineering and Computing, Sixth Annual Meeting of the Association for Practical and Professional Ethics, Washington, D.C., March 8–9, 1997.

Panelist, Conference on Managing Research Integrity, Ann Arbor, Mich., February 10, 1998.

Panelist, *IEEE Spectrum* roundtable on education in engineering ethics, Dallas, Tex., March 1, 1998. W. Sweet, Educating ethical engineers, *IEEE Spectrum*, vol. 35, no. 6, pp. 51–61, June 1998.

Organizer and moderator, dialogue session on privacy and community on-line, Second Annual Summit of the Communitarian Network, Washington, D.C., February 28, 1999.

Co-organizer, panel on ethics and design, International Conference on Ethics in Engineering and Computer Science, Cleveland, Ohio, March 23, 1999.

Co-moderator, *IEEE Spectrum* roundtable on ethics, intellectual property, and information technology, Cleveland, Ohio, March 24, 1999. J. R. Herkert and M. Loui, The ethics of intellectual property and the new information technologies, *IEEE Spectrum*, vol. 36, no. 8, pp. 29–37, August 1999.

Director, Science and Engineering Education Scholars Program, Urbana, Ill., June 26–30, 2000. This program helped 23 participants from nine universities prepare for academic careers in science and engineering. Sessions on academic duties and careers at different kinds of institutions, on learning styles, on teaching portfolios, on instructional objectives and course design, on innovative approaches to teaching and teaching with technology, on assessment, on finding an academic job, and on balancing personal and professional lives.

Organizing Committee, Complexity, Logic, and Computation Symposium, Boston, Mass., June 15, 2001.

Program Committee and organizer, panel on ethical and social issues criteria in academic accreditation, IEEE International Symposium on Technology and Society 2001, Stamford, Conn., July 6–7, 2001.

Program Committee, IEEE International Symposium on Technology and Society 2002, Raleigh, N.C., June 6–8, 2002.

Organizer, Regional Meeting of the IEEE Society on Social Implications of Technology, Urbana, Ill., April 4, 2003.

Program Committee, IEEE International Symposium on Technology and Society 2004, Worcester, Mass., June 17–19, 2004.

Panelist, Weaving SoTL into students' lives, Inaugural Conference of the International Society for the Scholarship of Teaching and Learning, Bloomington, Ind., October 21–24, 2004.

Program Committee, track on computer ethics and human values, Twenty-First ACM Symposium on Applied Computing, Dijon, France, April 23–27, 2006.

Program Committee, IEEE International Symposium on Technology and Society 2006, New York, N.Y., June 9–10, 2006.

Session synthesizer, Clickers (student response systems), 2006 Conference of the International Society for the Scholarship of Teaching and Learning, Washington, D.C., November 9–12, 2006.

Panelist, Ethics in higher education administration, Sixteenth Annual Meeting of the Association for Practical and Professional Ethics, Cincinnati, Ohio, February 22–25, 2007.

Program Committee, Workshop on Philosophy and Engineering, Delft, The Netherlands, October 29–31, 2007.

Presenter, Pedagogical demonstration: role-play scenarios for teaching responsible conduct of research (with B. J. Brummel, C. K. Gunsalus, K. L. Kristich), Seventeenth Annual Meeting of the Association for Practical and Professional Ethics, San Antonio, Tex., February 21–24, 2008.

Co-presenter, Development and assessment of role-play scenarios for teaching responsible conduct of research (with B. J. Brummel, C. K. Gunsalus, K. L. Kristich), First Biennial Responsible Conduct of Research Education, Instruction, and Training Conference, St. Louis, April 17–19, 2008.

Rapporteur, Workshop on Engineering, Social Justice, and Sustainable Community Development, National Academy of Engineering, Washington, D.C., October 2–3, 2008.

Program Committee, 2008 Workshop on Philosophy and Engineering, London, England, November 10–12, 2008.

Panel organizer, Publishing SOTL in the next generation: how to choose a journal. 2009 Conference of the International Society for the Scholarship of Teaching and Learning, Bloomington, Ind., October 22–25, 2009.

Program Committee, Forum on Philosophy, Engineering, and Technology, Golden, Colo., May 9-10, 2010.

Invited participant, Workshop on Synthetic Biology and Engineering Ethics, National Academy of Engineering, Washington, D.C., September 30, 2010.

Co-chair, Program Committee, IEEE International Symposium on Technology and Society 2011, Chicago, Ill., May 23–25, 2011.

Panel co-organizer, Plagiarism in academic journals, Twenty-First Annual Meeting of the Association for Practical and Professional Ethics, Cincinnati, Oh., March 1–4, 2012.

Panelist, A conversation about ethics education and resources, American Society for Engineering Education Annual Conference, San Antonio, Tex., June 10–13, 2012. Paper AC 2012-4208: Ethics education & resources: A summary of issues facing the field and resources to address them (with R. A. Bates, T. H. Broome, L. L. Burge, and R. Hollander).

Program Committee, 2012 Forum on Philosophy, Engineering, and Technology, Beijing, China, November 2–4, 2012.

Panelist, Why was my paper rejected? A conversation with two journal editors, American Society for Engineering Education Annual Conference, New Orleans, La., June 26–29, 2016.

Workshop co-leader, Why did your journal reject my paper? With M. Iskander, Hawaii International Conference on Education, Honolulu, Hawaii, January 3–6, 2017.

Panelist, You can be a star peer reviewer! American Society for Engineering Education Annual Conference, Columbus, Oh., June 25–28, 2017.

Workshop co-leader, How can I excel as a peer reviewer? With T. Nelson, Hawaii International Conference on Education, Honolulu, Hawaii, January 4–7, 2018.

Roundtable discussant, Nevertheless they persisted: College survivors of academic failures, Hawaii International Conference on Education, Honolulu, Hawaii, January 5–8, 2019.

Workshop co-leader, Using the OEC (Online Ethics Center) as a resource for teaching ethics & RCR, American Society for Engineering Education Annual Conference, Tampa, Fla., June 16–19, 2019.

Presenter, Assessment in STEM ethics education, Working Ethics into the Conversation: Introducing STEM Faculty to Teaching Ethics, National Academies of Science, Engineering, and Medicine, Washington, D.C., October 22–23, 2019.

Roundtable discussant, The power of emotions in an introductory college course, Hawaii International Conference on Education, Honolulu, Hawaii, January 4–7, 2020.

Public Service

Interviewer for Hertz Foundation graduate fellowships, January 1990, December 1991, December 1992.

Panelist, Research Initiation Awards, Division of Computer and Computation Research, National Science Foundation, March 1990, March 1992.

Site visitor, to evaluate a project at Southern Connecticut State University for the National Science Foundation, April 1994.

Panelist, NSF Young Investigator Awards, Directorate for Computer and Information Science and Engineering, National Science Foundation, May 1994.

Appraisals consultant, Ontario Council on Graduate Studies, to evaluate a proposed M.Sc. program in Computer Science at McMaster University, May 1995.

Member, Committee of Visitors, Division of Computer and Computation Research, National Science Foundation, July 1996.

Member, review team, graduate program in Computer Science, Loyola University Chicago, February 1999.

Consultant, Tennessee Board of Regents, to evaluate a proposed Ph.D. program in Computer and Information Systems Engineering at Tennessee State University, June 1999.

Member, review team, graduate and research programs in College of Engineering, Michigan State University, October 2000.

Chair, review team, graduate program in Computer Science, Indiana University Purdue University Indianapolis, February 2001.

Panelist, Research Experiences for Undergraduates Site Awards, Directorate for Computer and Information Science and Engineering, National Science Foundation, December 2001.

Panelist, Course, Curriculum, and Laboratory Improvement Program, National Science Foundation, July 2002, July 2003.

Panelist, Nanoscale Science and Engineering Centers Program, National Science Foundation, December 2003.

Panelist, Nanoscale Interdisciplinary Research Teams and Nanoscale Exploratory Research, National Science Foundation, March 2004, March 2006.

Panelist, Societal and Educational Implications of Scientific and Technological Advances on the Nanoscale, National Science Foundation, January 2005.

Member, review committee, *On Being a Scientist*, The National Academies, 2007–09.

Panelist, Innovations in Engineering Education, Curriculum, and Infrastructure Program, National Science Foundation, May 2009.

Panelist, Research Experiences for Undergraduates Sites Program, National Science Foundation, November 2010.

Panelist, Graduate Research Fellowship Program, National Science Foundation, January 2012.

Member, Committee of Visitors, Division of Engineering Education and Centers, National Science Foundation, September 2013.

Panelist, Education and Human Resources Core Research Program, National Science Foundation, November 2016.

Panelist, Innovations in Graduate Education Program, National Science Foundation, December 2017.

Panelist, Innovations in Graduate Education Program, National Science Foundation, November 2018.

Consultant, Florida International University, to evaluate a proposed Ph.D. program in engineering and computing education, November 2018.

Panelist, Innovations in Graduate Education Program, National Science Foundation, November 2019.

Recent Service at Purdue University

Chair, Faculty Development and Recognition Committee, School of Engineering Education, 2014–19.

Member, Search Committee for the Head of the School of Engineering Education, 2015–17.

Organizer, Engineering Education Research Seminar, 2015–17.

Member, Committee on Research Integrity, 2016–19.

Member, Graduate Committee, School of Engineering Education, 2016–18.

Member, Named Professorships Committee, College of Engineering, 2017–19.

Member, Graduate Council, 2017–19.

Current Mentoring

Benjamin Ahn, assistant professor, Iowa State University

Joyce Main, associate professor, Purdue University

Elizabeth Qian, graduate student, Massachusetts Institute of Technology

Selected Previous Service on Campus³

Chair, Computer Engineering Area Committee, Department of Electrical and Computer Engineering, 1986–88. Initiated changes in the computer engineering curriculum.

Produced the first brochure for the Department of Electrical and Computer Engineering, 1987.

Organizer, “Science, Technology, and Cultural Values” panel series, Program for the Study of Cultural Values and Ethics, 1993–94.

Chair, Teaching Evaluation and Awards Committee, Department of Electrical and Computer Engineering, 1993–96. Created the department’s faculty teaching award.

Organizer, First and Second Undergraduate Research Symposia, Department of Electrical and Computer Engineering, 1995, 1996.

³ I have served as a member of many committees at the department, college, and campus levels. In the service activities listed here, I took a leadership role.

Chair, Teaching Evaluation and Improvement Subcommittee, College of Engineering, 1994–96.
Convener, Policy and Planning Committee, Coordinated Science Laboratory, 1996.
Associate Dean of the Graduate College, 1996–2000. Recommended and implemented policies; approved graduate courses and degree programs; counseled students and mediated conflicts; handled allegations of research misconduct; and managed people and resources at the Graduate College.
Created the Outstanding Mentor Award, launched the Preparing Future Professors project, simplified the course approval process, and started cross-training and annual performance reviews of the staff.
Organizer and presenter, “Successful Groups and Teams in the Classroom,” 2001. A series of workshops for faculty on cooperative learning techniques.
Consultative Committee to Assist in the Selection of a President, 2005.
Chair, Senate Library Committee, 2005.
Chair, Ad Hoc Committee to Explore an Interdisciplinary Minor in Leadership Studies, 2006.
Chair, Campus NCA Accreditation Subcommittee on Leadership for the 21st Century, 2007–08.
Chair, Leadership Studies Minor Working Group, 2008–11; Chair, Leadership Studies Faculty Advisory Committee, 2011–12.

Other

Member of many doctoral committees.
Reviewer for scholarly journals, conferences, publishers, and research funding agencies.
Reference for numerous faculty candidates and candidates for promotion.

Civic and Community Activities

M.I.T. Community Players: Boatswain in *HMS Pinafore*, stage manager for two one-act plays, 1980.
Illinois Opera Theater: chorus member in *The Magic Flute* and in *Amahl and the Night Visitors*, 1981.
Science Committee, Yankee Ridge School PTA: demonstrations and experiments, 1993–97.
Children’s Choir, Unitarian-Universalist Church of Champaign-Urbana: volunteer pianist and music arranger, 1999–2000, 2001–02; volunteer director, 2002–14.
University Laboratory High School: taught week-long Agora Days classes on ballroom dance and on professional ethics, since 2002; parent representative to Parent-Faculty Organization, 2003–04.

March 2020