Charles R. Wallace

Associate Professor & Director of Undergraduate Studies
Computer Science Department
Michigan Technological University
Houghton, MI 49931 USA

[redacted]

Education

University of Michigan: Ph.D., Computer Science & Engineering (1999)
University of California, Santa Cruz: M.A., Linguistics (1992)
University of Pennsylvania: B.A., Linguistics, *Magna cum laude*, Phi Beta Kappa (1989)

Research interests

requirements analysis · software usability & accessibility
communication in software development · agile development methods
applied formal methods · software engineering education

Academic employment

Interim Chair, Michigan Tech (2012–present)
Associate Professor, Michigan Tech (2006–present)
Visiting Professor, Pontificia Universidad Catolica de Chile (2010)
Assistant Professor, Michigan Tech (2000–2006)
Visiting Assistant Professor, U. Delaware (1999–2000)

Other employment

Consultant, Eaton Corporation, Milwaukee, WI (2005)
Consultant, Thermoanalytics, Inc., Hancock, MI (2004)
Intern, Microsoft Research, Redmond WA (1998–99)
Intern, Schlumberger, Austin TX (1998)
Intern, Kestrel Institute, Palo Alto CA (1996)
Software Engineer, Harris Digital Telephone Systems, Novato, CA (1987–90)

Professional memberships

ACM SIGCSE · IEEE

Award

Faculty Distinguished Service Award, Michigan Tech (2014)

Courses taught

Lower-level undergraduate

"Perspectives on Inquiry: Minds and Machines"
"Object Oriented Design"
"Explorations in Computing"
"Discrete Structures"
"Introduction to Computer Science"

Upper-level undergraduate

"Senior Software Engineering Project"
"Software Quality Assurance"
"Model Driven Development"
"Software Testing"
"Senior Seminar"
"Safety Critical Software Systems"
"Introduction to Software Engineering"
"Programming Languages"

Graduate

"Software for Senior Citizens"
"Theory of Computation"
"Requirements Engineering"
"Formal Methods"
"Advanced Software Engineering"
"Programming Languages"

Current student advisees Shreya Kumar (PhD), Leo C. Ureel II (PhD), Mugdha Degaonkar (MS)

Past M.S. theses/projects

Harriet King (2013) *Understanding "just enough" users: motivation style and proficiency*
Kishor Joshi (2007) *Testing and maintenance of ConcurrentMentor*
Øystein Thorsen (2006) *Automated verification of UPC memory consistency*
Kohinoor (Lisa) Begum (2005) *UPC collective conformance suite*
Abu Ashraf (2004) *Design and use of instruments for the measurement of software usefulness*
Parul Mishra (2004) *Bridging the software requirements-architecture gap*
Beena More (2004) *Statechart Diagram Executor*
Ravish Mehta (2004) *PFEdit: A graphical editor for Problem Frame diagrams*
William Kuchera (2003) *Illuminating the UPC memory model*
Varsha Awhad (2002) *A unified formal specification and analysis of the new Java memory models*
Yongsheng Huang (2002) *An investigation of the UPC memory model*

Other student advising

6 M.S. advisees under "coursework" option
Ph.D. committees: 15 completed
M.S. committees: 29 completed
Faculty Advisor, Software Engineering Program (2004–present)
Faculty Advisor, Phi Kappa Theta fraternity (2008–2011)

University service

Organizer, World Usability Day—Upper Peninsula (2010–present)
President, Canterbury House Campus Ministry (2012–present)
ABET Assessment, CS and SE programs (2011–present)
CS Undergraduate Committee (2001–present)
General Education Core Working Group (2011–2012)
Facilitator, Diversity Literacy Workshops (2011–2012)
Advisory Board, Canterbury House Campus Ministry (2011–2012)
General Education Council Working Group on Communication Goals (2011)
Senate Academic Policy Committee (2010–2012)
University Senate, alternate (2007–2012)
University Assessment Committee (2006–2012)
CS Promotion, Tenure & Reappointment Committee (2006–2012)
Reading as Inquiry program (2004–2011)
Search Committee, Dean of College of Sciences & Arts (2007–2008)
Search Committee, CS Assistant Professor position (2006)
Faculty advisor, Husky Game Enterprise (2006–07)
Reviewer, Summer Undergraduate Research Fellowship program (2006)

CS Living Community mentor (2003–2005)
Faculty advisor, Aerospace Enterprise (2003–2005)
Search Committee, CS Lecturer position (2004)
Coauthor, Software Engineering Degree proposal (2003)

Reviewing

Abstract State Machine Conference
Addison-Wesley Publishing
ACM Symposium on Applied Computing (SAC)
ASM, B and Z (ABZ) Conference
Cambridge University Press
Concurrency and Computation: Practice and Experience
Formal Aspects of Computing Science, British Computer Society
Frontiers in Education Conference
Fulbright Egypt
Fulbright Chile
ICT Software Journal
IEEE Software
IGI Global
International Conference on Formal Engineering Methods (ICFEM)
John Wiley & Sons, Inc.
Journal of Logic and Computation
Latin American & Caribbean Collaborative ICT Research (LACCIR), Microsoft Research
Journal of Universal Computer Science
NSF Research Experiences for Undergraduates (REU) SITES program
Parallel and Distributed Systems: Testing and Debugging (PADTAD)
SIGCSE Conference on Computer Science Education
Symposium on Theoretical Aspects of Computer Science (STACS)

Other activities

Fulbright Ambassador (2013–present)
Fulbright Scholar, Pontificia Universidad Catolica de Chile, Santiago, Chile (2010)
Workshop, "Incorporating Communication Outcomes into the Computer Science Curriculum", Oxford OH and Raleigh NC (2010–2012)
Workshop organizer, "Teaching Communication Skills in the Software Engineering Curriculum: A Forum for Professionals and Educators", Oxford OH (2008)
Program Committee, ASM, B and Z (ABZ) Conference (2007–2008)
Workshop, "Network Community for Software Engineering Education" (SWENET), Milwaukee WI (2005)
Steering Committee, Abstract State Machine Conference (2005–2007)
Program Committee, International Conference on Formal Engineering Methods (ICFEM) (2005)

Outreach programs

Online at the library: Computer assistance for elderly users. In conjunction with Little Brothers Friends of the Elderly, Portage Lake District Library, and graduate students in Computer Science and Humanities at Michigan Tech. (2011–present)

Copper Country Programmers: Instruction in computer programming for middle and high school students. In conjunction with the Copper Country Intermediate School District. (2011–present)

Funded projects

(PI) Breaking Digital Barriers: Digital Literacy for the Elderly. With L. Bowen and L.C. Ureel II. Superior Ideas, 2012–present. $2,885.

(PI) Pan-American Software Quality Institute. With L. Ott. Pan American Advanced Studies Institutes (PASI), National Science Foundation, 2012-2013. $98,002 + $25,000 from LACCIR Virtual Institute.

(Co-PI) Environmental cybercitizens: Engaging citizen scientists in global environmental change through crowdsensing and visualization. With A. Mayer (PI), R. Donovan, R Pastel, S. Oppliger. Cyberinfrastructure-TEAM (CI-TEAM), National Science Foundation, 2011–2013. $249,840.

(PI) The software communication Chautauqua. With P.V. Anderson, J. Burge and M. Seigel. CISE Pathways to Revitalized Undergraduate Computing Education (CPATH), National Science Foundation, 2007–2008. $66,595.

(PI) Course development: Safety critical software development using C. GE Aviation, 2007. $19,859.

(PI) Speaking of software: Integrating communication and documentation techniques into an undergraduate Software Engineering curriculum. With M.A. Brady and R.R. Johnson. CISE Combined Research and Curricular Development and Educational Innovation Program (CRCD/EI), National Science Foundation, 2004–2007. $313,249 + $6,000 NSF Research Experience for Undergraduates (REU).

(Co-PI) UPC technology development projects. With S. Seidel (PI) and P. Merkey. U.S. Department of Defense, 2003–2005. $754,740.

(Co-PI) UPC technology development. With S. Seidel (PI) and P. Merkey. Hewlett-Packard Corporation, 2002–2003. $189,558.

(PI) Pedagogical tools for Abstract State Machines. Microsoft Research, 2002–2005. $32,500.

Refereed publications

Instruction in software project communication through guided inquiry and reflection. With S. Kumar. Frontiers in Education Conference, Madrid, Spain, 2014.

Engaging software engineering students in communication design through a pattern language. With S. Kumar. International Writing Across the Curriculum Conference (IWAC), Minneapolis MN, 2014.

And maybe it doesn't matter: Exploring the conversation between writing and disciplinary faculty (Panel). With M.C. Paretti, M. Gustafsson, N. Lerner and M. Hoffman. International Writing Across the Curriculum Conference (IWAC), Minneapolis MN, 2014.

Communication strategies for mentoring in software development projects. With S. Kumar. Workshop on Cooperative and Human Aspects of Software Engineering, Hyderabad, India, 2014.

Teaching and talking in code: Pedagogical partnerships with computer science (Panel). With M. Seigel, R. Pastel, W. Zhang, L. Bowen and L.C. Ureel II. Conference on College Composition & Communication (CCCC), Indianapolis IN, 2014.

Adding unit test experience to a usability centered project course. With C. Brown, R. Pastel, M. Seigel and L. Ott. ACM Technical Symposium on Computer Science Education (SIGCSE), Atlanta GA, 2014.

Copper Country Programmers: A novel curriculum for beginning programmers in middle and high school (Poster). With J. Earnest and L.C. Ureel II. ACM Technical Symposium on Computer Science Education (SIGCSE), Atlanta GA, 2014.

A tale of two projects: A pattern based coparison of communication strategies in student software development. With S. Kumar. Frontiers in Education (FIE), Oklahoma City OK, 2013.

Software for Senior Citizens: An experiential learning course in gerontology, software usability and digital literacy. With L.C. Ureel II. Frontiers in Education (FIE), Oklahoma City OK, 2013.

Extrinsic motivation and user performance. With H. King, R. Pastel and P. Ward. Human Factors and Ergonomics Society (HFES), San Diego CA, 2013.

Lessons from our elders: Identifying obstacles to digital literacy through direct engagement. With H. King, S. Kumar and L.C. Ureel II. International Conference on Pervasive Technologies Related to Assistive Environments (PETRAE), Rhodes, Greece, 2013.

Patterns of inquiry in computer literacy help sessions for the elderly (Poster). With S. Kumar. International Conference on Pervasive Technologies Related to Assistive Environments (PETRAE), Rhodes, Greece, 2013.

Guidance for exploratory testing through Problem Frames (Poster). With S. Kumar. Conference on Software Engineering Education & Training (CSEET), San Francisco CA, 2013.

Communication patterns: A tools for analyzing communication in emerging computer science educational practices (Poster). With S. Kumar. ACM Technical Symposium on Computer Science Education (SIGCSE), Denver CO, 2013.

A programmer-friendly UPC memory model specification. With S. Seidel and A. Ebnenasir. Conference on Partitioned Global Address Space Programming Models (PGAS), Santa Barbara CA, 2012.

Scrum across the CS/SE Curricula: A Retrospective (Panel). With D. Troy, S. Mohan and M. Hoffman. ACM Technical Symposium on Computer Science Education (SIGCSE), Raleigh NC, 2012.

Understanding relaxed memory consistency through interactive visualization (Tool Demo). With O. Thorsen. ASM Symposium on Software Visualization (SOFTVIS), Salt Lake City, 2010.

Abstract State Machines and the inquiry process. With J.K. Huggins. In A. Blass, N. Dershowitz

and W. Reisig (eds.), *Fields of Logic and Computation.* Lecture Notes in Computer Science 6300, 2010.

Making and acting: Ethnographic development of a case study approach. With M. Seigel and T. Vosecky. *Technical Communication*, 55(4), 2008.

Speaking of software: Case studies in software communication. With A. Brady, M. Seigel and T. Vosecky. In H.J.C. Ellis, S.A. Demurjian and J.F. Naveda (eds.), *Software Engineering: Effective Teaching and Learning Approaches and Practices.* IGI Global, 2008.

Teaching communication skills in the software engineering curriculum (Workshop). With J. Burge. Conference on Software Engineering Education & Training (CSEET), Charleston SC, 2008.

Addressing communication issues in software development through case studies. With A. Brady, M. Seigel and T. Vosecky. Conference on Software Engineering Education & Training (CSEET), Dublin, Ireland, 2007.

RFID cards: A new deal in accessibility for the elderly. With R. Pastel and J. Heines. International Conference on Human-Computer Interaction (HCII), Beijing, China, 2007.

Automated verification of UPC memory consistency. With Oystein Thorsen. Workshop on Verified Software: Theories, Tools, Experiments (VSTTE), Seattle, WA, 2006.

The intersecting futures of Technical Communication and Software Engineering: Forging a multidisciplinary alliance. With M.A. Brady and R.R. Johnson. *Technical Communication* 53(3), 2006.

Can Abstract State Machines be useful in language theory? With Y. Gurevich and M. Veanes. Developments in Language Theory (DLT), Santa Barbara, CA, 2006. Springer LNCS 4036.

Student-based case studies in software communication. With T. Vosecky, L. Steinbacher, A. Mareck, R.R. Johnson and A. Brady. Conference on Software Engineering Education and Training (CSEET), Kahuku, Oahu, Hawaii, 2006 (short paper).

A course in problem analysis and structuring through Problem Frames. With X. Wang and V. Bluth. Conference on Software Engineering Education and Training (CSEET), Kahuku, Oahu, Hawaii, 2006.

Incorporating and compensating: Some challenges of interdisciplinary research on programs inside and outside of technical communication. With A. Brady, R.R. Johnson and T. Vosecky. Council for Programs in Technical and Scientific Communication Conference (CPTSC), Lubbock, TX, 2005.

UPC Language Specifications V. 1.2, § 5.1.2.3 (Program execution) and § B (Formal UPC memory consistency semantics). With D. Bonachea and K. Yelick. UPC Consortium, 2005. Available at [`http://www.upc.gwu.edu`].

The UPC memory model: Problems and prospects. With W. Kuchera. International Parallel and Distributed Processing Symposium (IPDPS), Santa Fe, NM, 2004.

A unified formal specification and analysis of the new Java memory models. With V. Awhad. In *Abstract State Machines 2003: Advances in Theory and Applications*, Springer LNCS 2589, 2003.

Teaching ASMs, teaching with ASMs: Opportunities in undergraduate education. With J.K. Huggins and J. Mayo. In *Abstract State Machines 2003: Advances in Theory and Applications*, Springer LNCS 2589, 2003 (short paper).

On the tamability of the Location Consistency model. With G. Tremblay and J.N. Amaral. International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA), Las Vegas, NV, 2002.

An Abstract State Machine specification and verification of the Location Consistency memory model and cache protocol. With G. Tremblay and J.N. Amaral. *Journal of Universal Computer Science* 7(11), 2001.

Investigating Java concurrency using Abstract State Machines. With Y. Gurevich and W. Schulte. In *Abstract State Machines: Theory and applications*, Springer LNCS 1912, 2000.

Formalizing database recovery. With Yuri Gurevich and Nandit Soparkar. *Journal of Universal Computer Science* 3(4), 1997.

Supervisory control of workflow scheduling. With Paul Jensen and Nandit Soparkar. Advanced Transaction Models & Architectures Workshop (ATMA), Goa, India, 1996.

Revisiting spheres of control: an approach to advanced recovery. With Nandit Soparkar. Advanced Transaction Models & Architectures Workshop (ATMA), Goa, India, 1996.

Formalizing recovery in transaction-oriented database systems. With Y. Gurevich and N. Soparkar. Conference on Management of Data (COMAD), Pune, India, 1995.

The semantics of the C++ programming language. In *Specification and Validation Methods*, ed. E. Boerger, Oxford University Press, 1995.

Other publications

UPC Collective Conformance Suite. With L. Begum. Technical Report 06-01, Computer Science Dept., Michigan Technological University, 2006.

A proposal for a UPC memory consistency model. With K. Yelick and D. Bonachea. Technical Report, Lawrence Berkeley National Laboratory, 2003.

An Abstract State Machine primer. With J.K. Huggins. Technical Report 02-04, Computer Science Dept., Michigan Technological University, 2002.

Specification and verification of the Windows Card runtime environment using Abstract State Machines. With Y. Gurevich. Technical Report MSR-TR-99-07, Microsoft Research, 1999.

The semantics of the Java programming language. Technical Report CSE-TR-355-97, University of Michigan, 1997.

Last update: 24 July 2014