Mark Joseph Guzdial

Professor

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Table of Contents

I. Earned Degrees

Ph.D.	1993	University of Michigan	*Education and Computer Science & Engineering*
M.S.	1986	University of Michigan	*Computer Science & Engineering*
B.S.	1984	Wayne State University	*Computer Science*

II. Employment History

Professor	Computer Science & Engineering Division College of Engineering University of Michigan School of Information (courtesy) Engineering Education Research Program (core faculty)	*2018–Present*
Professor	School of Interactive Computing College of Computing Georgia Institute of Technology	*2005–2018*
Associate Professor	College of Computing Georgia Institute of Technology	*1999–2005*
Assistant Professor	College of Computing Georgia Institute of Technology	*1993–1999*
Member of Technical Staff	Bell Communications Research	*1984–1987*

III. Honors and Awards

A. Research Honors and Awards

- **SIGCSE 2019 Outstanding Contribution to Computing Education**.
- **Chairs Award**, Briana B. Morrison, Lauren E. Margulieux, Mark Guzdial (2015). Subgoals, Context, and Worked Examples in Learning Computing Problem Solving. Proceedings of the eleventh annual ACM conference on International Computing Education Research (ICER '15), pages 21–29.
- **Fellow of the ACM**, 2014
- **Chairs Award**, Mark Guzdial (2013). Exploring hypotheses about media computation. Proceedings of the ninth annual ACM conference on International Computing Education Research (ICER '13), pages 19–26.
- **ACM Distinguished Lecturer**, 2001-2014
- **Regents Research in Undergraduate Education Award**, University System of Georgia, 2001
- **Outstanding Interdisciplinary Activity Award**, Georgia Institute of Technology, 2000
- **Junior Faculty Research Award**, College of Computing, Georgia Institute of Technology, 1998
- **Edenfield Faculty Research Award**, College of Computing, Georgia Institute of Technology, 1998
- **NSF CAREER Award**, 1995

B. Teaching Honors and Awards

- **Provost's Teaching and Learning Fellow**, Georgia Institute of Technology, 2016–2018.
- **Distinguished Educator**, ACM, 2014
- **The William A. 'Gus' Baird Faculty Teaching Award**, College of Computing, Georgia Institute of Technology, 2014. (First two-time awardee.)
- **Undergraduate Teaching Award**, IEEE Computer Society, 2012
- **ACM Karl V. Karlstrom Outstanding Educator Award**, with Barbara Ericson, 2010.
- **The William A. 'Gus' Baird Faculty Teaching Award**, College of Computing, Georgia Institute of Technology, 2001
- **Outstanding Innovative Use of Educational Technology**, Georgia Institute of Technology, 1997

C. Service Honors and Awards

- **Outstanding Service Award**, Georgia Institute of Technology, with Barbara Ericson, 2010.
- Dean's Award for Singular Service to the College of Computing, Threads Leadership Team, 2006

D. Other Honors and Awards

- Participant, Georgia Tech University Leadership Program, 2004–2005
- **McGraw-Hill Technology Design Competition**, Computers and Writing Conference, Teaching and Learning Technologies for Rhetoric and Writing, with Lissa Holloway-Attaway, 2001
- **Progressive Architecture Design Research Citation**, Architecture Magazine Design Research Award, with Sabir Khan and Craig Zimring, 1999
- **American Institute of Architects Education Honor Award**, with Sabir Khan and Craig Zimring, 1999
- **Top Six Educational Software Products of 1992**, *Teaching & Learning Magazine*, 1992
- *Parents' Choice Magazine* **Gold Award**, 1992

IV. Research, Scholarship, and Creative Scholarship

Ph.D. Thesis

Title: *Emile: Software-Realized Scaffolding for Science Learners Programming Multiple Media*
Date Completed: *September 1993*
Advisor: *Elliot Soloway*
University: *University of Michigan*

A. Published Books, Book Chapters and Edited Volumes

A.1. Books

[1] Mark Guzdial. Computing for other disciplines. In Sally Fincher and Anthony Robins, editors, *The Cambridge Handbook of Computing Education Research*. Cambridge University Press, 2019.

[2] Mark Guzdial and Ben du Boulay. History of computing education research. In Sally Fincher and Anthony Robins, editors, *The Cambridge Handbook of Computing Education Research*. Cambridge University Press, 2019.

[3] Mark Guzdial. *Learner-centered design of computing education: Research on computing for everyone*. Synthesis Lectures on Human-Centered Informatics. Morgan and Claypool, 2015.

[4] Mark Guzdial and Barbara Ericson. *Introduction to Computing and Programming in Python: A Multimedia Approach*. Prentice-Hall, Upper Saddle River, NJ, fourth edition edition, 2015.

[5] Mark Guzdial and Barbara Ericson. *Introduction to Computing and Programming in Python: A Multimedia Approach*. Prentice-Hall, Upper Saddle River, NJ, third edition edition, 2011.

[6] Mark J. Guzdial and Barbara Ericson. *Problem Solving with Data Structures Using Java: A Multimedia Approach*. Prentice Hall Press, Upper Saddle River, NJ, USA, 1st edition, 2010.

[7] Mark J. Guzdial and Barbara Ericson. *Introduction to Computing and Programming in Python, A Multimedia Approach, Second Edition*. Prentice Hall Press, Upper Saddle River, NJ, USA, 2009.

[8] Mark Guzdial and Barbara Ericson. *Introduction to Computing and Programming in Java: A Multimedia Approach*. Prentice-Hall, 2005.

[9] Mark Guzdial. *Introduction to Computing and Programming in Python: A Multimedia Approach*. Prentice-Hall, Upper Saddle River, NJ, 2004.

[10] Mark J. Guzdial and Kimberly M. Rose. *Squeak: Open Personal Computing and Multimedia*. Prentice Hall PTR, Upper Saddle River, NJ, USA, 2001.

[11] Mark Guzdial. *Squeak: Object-Oriented Design with Multimedia Applications*. Prentice Hall PTR, Upper Saddle River, NJ, USA, 2000.

[12] Mark Guzdial and Fred Weingarten. *Setting a Computer Science Research Agenda for Educational Technology*. Computing Research Association, 1997.

[13] Mark Guzdial. *Projects for LogoExpress*. Logo Computer Systems Inc., Montreal, Quebec, Canada, 1990.

[14] Mark Guzdial. *Introducing LogoExpress*. Logo Computer Systems Inc., Montreal, Quebec, Canada, 1990.

A.2. Refereed Book Chapters

[1] Mark Guzdial and Ben du Boulay. History of computing education research. In Sally Fincher and Anthony Robins, editors, *The Cambridge Handbook of Computing Education Research*. Cambridge University Press, 2019.

[2] Mark Guzdial. Computing for other disciplines. In Sally Fincher and Anthony Robins, editors, *The Cambridge Handbook of Computing Education Research*. Cambridge University Press, 2019.

[3] Janet L. Kolodner, Brian Dorn, Jakita Owensby, and Mark Guzdial. Theory and practice of case-based learning aids. In *Theoretical Foundations of Learning Environments*. Lawrence Erlbaum and Associates, Mahwah, NJ, second edition edition, 2012.

[4] Mark Guzdial. Why is it so hard to learn to program? In Andy Oram and Greg Wilson, editors, *Making Software: What really works and why we believe it*. O'Reilly, 2010.

[5] Mark Guzdial. Programming environments for novices. In Marian Petre and Sally Fincher, editors, *Computer Science Education Research*. Springer-Verlag, 2004.

[6] Andreas Dieberger and Mark Guzdial. CoWeb: Experiences with collaborative web spaces. In C. Lueg and D. Fisher, editors, *From Usenet to CoWebs: Interacting with Virtual Communities and Information Spaces*. Springer-Verlag, 2003.

[7] Mark Guzdial. Logo. In *Encylopedia of Electrical and Electronics Engineering*. John Wiley and Sons, 2000.

[8] Mark Guzdial and Jennifer Turns. CSCL for engineers: Scaling up assessment. In Robert Kozma and Michael Jacobson, editors, *Advanced Technology for Science Learning*. Ablex Publishing, 2000.

[9] Janet L. Kolodner, Jakita Owensby, and Mark Guzdial. Theory and practice of case-based learning aids. In David Jonassen, editor, *Theoretical Foundations of Learning Environments*. Lawrence Erlbaum and Associates, Mahwah, NJ, 2000.

[10] Mark Guzdial. Technological support for project-based learning. In David Palumbo and Chris Dede, editors, *Association for Supervision and Curriculum Development (ASCD) 1998 Yearbook: Learning and Technology*. ASCD, Danvers, MA, 1998.

[11] Elliot Soloway and Mark Guzdial. Designing for learners. In Mark Guzdial and Fred Weingarten, editors, *Setting a Computer Science Research Agenda for Educational Technology*. Computing Research Association, Washington DC, 1997.

[12] Mark Guzdial and Fred Weingarten. Research in the union of computer science and education. In Mark Guzdial and Fred Weingarten, editors, *Setting a Computer Science Research Agenda for Educational Technology*. Computing Research Association, Washington DC, 1997.

[13] Janet Kolodner and Mark Guzdial. Effects with and of CSCL: Tracking learning in a new paradigm. In Tim Koschmann, editor, *CSCL: Theory and Practices of an Emerging Paradigm*. Lawrence Erlbaum and Associates, Hillsdale, NJ, USA, 1996.

[14] Mark Guzdial, John Reppy, and Randal Smith. Report of the user/programmer distinction working group. In Brad A. Myers, editor, *Languages for Developing User Interfaces*. Jones and Bartlett, Boston, MA, 1992.

[15] Mark Guzdial, Peri Weingrad, Robert Boyle, and Elliot Soloway. Design support environments for end users. In Brad A. Myers, editor, *Languages for Developer User Interfaces*. Jones and Bartlett, Boston, MA, 1992.

[16] Mark Guzdial, Elliot Soloway, Phyllis Blumenfeld, Luke Hohmann, Kathy Ewing, Iris tabak, Kathy Brade, and Yasmin Kafai. The future of CAD: Technological support for kids building artifacts. In D. Balestri, S. Ehrmann, and D. L. Ferguson, editors, *Learning to Design, Designing to Learn: Using Technology to Transform the Curriculum*. Ablex Publishing, Norwood, NJ, 1992.

[17] Elliot Soloway, Mark Guzdial, Kathy Brade, Luke Hohmann, Iris Tabak, Peri Weingrad, and Phyllis Blumenfeld. Technological support for the learning and doing of design. In M. Jones and P.H. Winne, editors, *Foundations and Frontiers of Adaptive Learning Environments*. Springer-Verlag, New York, NY, 1992.

B. Refereed Publications and Submitted Articles

B.1. Published and Accepted Journal Articles

[1] Barbara Ericson, W Richards Adrion, Renee Fall, and Mark Guzdial. State-based progress towards computer science for all. *ACM Inroads*, 7(4):57–60, 2016.

[2] Lauren E. Margulieux, Richard Catrambone, and Mark Guzdial. Employing subgoals in computer programming education. *Computer Science Education*, 16(1):1–24, 2016.

[3] Mark Guzdial, Barbara Ericson, Tom Mcklin, and Shelly Engelman. Georgia Computes!: An intervention in a US state, with formal and informal education in a policy context. *Trans. Comput. Educ.*, 14(2):1–29, 2014.

[4] Elizabeth DiSalvo, Amy Bruckman, Mark Guzdial, and Tom McKlin. Saving face while geeking out: Navigating motivations of non-learners. *Journal of the Learning Sciences*, 23(3):269–315, 2014.

[5] Klara Benda, Amy Bruckman, and Mark Guzdial. When life and learning do not fit: Challenges of workload and communication in introductory computer science online. *ACM Transactions on Computing Education*, 12(4):1–38, 2012.

[6] Mark Guzdial and Barbara Ericson. Georgia Computes!: an alliance to broaden participation across the state of Georgia. *ACM Inroads*, 3(4):86–89, 2012.

[7] T. Balch, J. Summet, D. Blank, D. Kumar, M. Guzdial, K. O'Hara, D. Walker, M. Sweat, C. Gupta, S. Tansley, J. Jackson, Mansi Gupta, M.N. Muhammad, S. Prashad, N. Eilbert, and A. Gavin. Designing personal robots for education: Hardware, software, and curriculum. *IEEE Pervasive Computing*, 7(2):5–9, 2008.

[8] Allison Elliott Tew, Brian Dorn, Jr. William D. Leahy, and Mark Guzdial. Context as support for learning computer organization. *Journal of Education Resources in Computing*, 8(3):1–18, 2008.

[9] Svetlana Yarosh and Mark Guzdial. Narrating data structures: The role of context in CS2. *Journal of Educational Resources in Computing*, 7(4):Article 6, 2008.

[10] Jochen Rick and Mark Guzdial. Situating CoWeb: A scholarship of application. *International Journal of Computer-Supported Collaborative Learning*, 1(1), 2006.

[11] Andrea Forte and Mark Guzdial. Motivation and non-majors in computer science: Identifying discrete audiences for introductory courses. *IEEE Transactions on Education*, 48(2):248–253, 2005.

[12] Mark Guzdial and Elliot Soloway. Teaching the nintendo generation to program. *Communications of the ACM*, 45(4):17–21, 2002.

[13] Michael Clancy, John Stasko, Mark Guzdial, Sally Fincher, and Nell Dale. Models and areas for cs education research. *Computer Science Education*, 11(4):323–341, 2001.

[14] Mark Guzdial, Jochen Rick, and Colleen Kehoe. Beyond adoption to invention: Teacher-created collaborative activities in higher education. *Journal of the Learning Sciences*, 10(3):265–279, 2001.

[15] Mark Guzdial. Centralized mindset: A student problem with object-oriented programming. *Journal of Computer Science Education*, 14(3/4):28–32, 2001.

[16] Noel Rappin, Mark Guzdial, Matthew Realff, and Pete Ludovice. Connections as a focus for model-building learning in engineering. *Interactive Learning Environments*, 9(2):101–141, 2001.

[17] Maria da Graça Pimentel, Y. Ishiguro, Bolot Kerimbaev, Gregory D. Abowd, and Mark Guzdial. Supporting long-term educational activities through dynamic web interfaces. *Interacting with Computers*, 13(3):353–374, 2000.

[18] John T. Stasko, Richard Catrambone, Mark Guzdial, and K. McDonald. An evaluation of space-filling information visualizations for depicting hierarchical structures. *International Journal of Human-Computer Studies*, 53(5):631–866, 2000.

[19] Matthew Realff, Pete Ludovice, Mark Guzdial, Tom Morley, and Kayt Sukel. Computer supported collaborative learning for curriculum integration. *Computers and Chemical Engineering*, 24:1473–1479, 2000.

[20] Mark Guzdial and Jennifer Turns. Effective discussion through a computer-mediated anchored forum. *Journal of the Learning Sciences*, 9(4):437–470, 2000.

[21] A. Ram, R. Catrambone, M.J. Guzdial, C.M. Kehoe, D.S. McCrickard, and J.T. Stasko. PML: adding flexibility to multimedia presentations. *IEEE Multimedia*, 6(2):40–52, 1999.

[22] Mark Guzdial. Supporting learners as users. *Journal of Computer Documentation*, 23(2):3–13, 1999.

[23] Mark Guzdial and Colleen Kehoe. Apprenticeship-based learning environments: A principled approach to providing software-realized scaffolding through hypermedia. *Journal of Interactive Learning Research*, 9(3/4):289–336, 1998.

[24] Cindy Hmelo, Mark Guzdial, and Jennifer Turns. Computer-supported for collaborative learning: Learning to support student engagements. *Journal of Interactive Learning Research*, 9(3/4), 1998.

[25] Mark Guzdial, Michael Konneman, Christopher Walton, Luke Hohmann, and Elliot Soloway. Layering scaffolding and CAD on an integrated workbench: An effective design approach for project-based learning support. *Interactive Learning Environments*, 6(1/2):143–179, 1998.

[26] Amnon Shabo, Mark Guzdial, and John Stasko. An apprenticeship-based multimedia courseware for computer graphics studies delivered on the world wide web. *Computers and Education*, 29(2-3):103–116, 1997.

[27] Mark Guzdial, Janet L. Kolodner, Cindy Hmelo, Hari Narayanan, David Carlson, Noel Rabbin, Roland Hübscher, Jennifer Turns, and Wendy Newstetter. Computer support for learning through complex problem-solving. *Communications of the ACM*, 39(4):43–45, 1996.

[28] Albert N. Badre, Mark Guzdial, Scott E. Hudson, and Paulo J. Santos. A user interface evaluation environment using synchronized video, visualizations, and event trace data. *Journal of Software Quality*, 4:101–113, 1995.

[29] Mark Guzdial. Software-realized scaffolding to facilitate programming for science learning. *Interactive Learning Environments*, 4(1):1–44, 1995.

[30] Ken E. Hay, Mark Guzdial, Shari Jackson, Robert A. Boyle, and Elliot Soloway. Students as multimedia composers. *Computers and Education*, 23(4):301–317, 1994.

[31] Kathy Brade, Mark Guzdial, Mark Steckel, and Elliot Soloway. Whorf: A visualization tool for software maintenance. *International Journal on Software and Knowledge Engineering*, 4(1):1–16, 1991.

[32] Phyllis C. Blumenfeld, Elliot Soloway, Ronald W. Marx, Joseph S. Krajcik, Mark Guzdial, and Annemari Palincsar. Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist*, 26(3 & 4):369–398, 1991.

[33] George J. Boggs, Richard Alley, and Mark Guzdial. Digital speech recording and playback system using a multiprocessor architecture. *Behavior Research Methods, Instruments, & Computers*, 16(5):420–424, 1984.

B.2. Conference Presentations with Proceedings

Refereed

[1] Miranda C. Parker and Mark Guzdial. A statewide quantitative analysis of computer science: what predicts cs in georgia public high school? In *Proceedings of the 2019 ACM Conference on International Computing Education Research*, ICER '19, pages 317–317, New York, NY, USA, 2019. ACM.

[2] Bahare Naimipour, Mark Guzdial, and Tamara Shreiner. Helping social studies teachers to design learning experiences around data: Participatory design for new teacher-centric programming languages. In *Proceedings of the 2019 ACM Conference on International Computing Education Research*, ICER '19, pages 313–313, New York, NY, USA, 2019. ACM.

[3] Amber Solomon, Vanessa Oguamanam, Mark Guzdial, and Betsy DiSalvo. Making cs learning visible: Case studies on how visibility of student work supports a community of learners in cs classrooms. In *Proceedings of the 2019 ACM Conference on Innovation and Technology in Computer Science Education*, ITiCSE '19, pages 161–167, New York, NY, USA, 2019. ACM.

[4] Kathryn Cunningham, Shannon Ke, Mark Guzdial, and Barbara Ericson. Novice rationales for sketching and tracing, and how they try to avoid it. In *Proceedings of the 2019 ACM Conference on Innovation and Technology in Computer Science Education*, ITiCSE '19, pages 37–43, New York, NY, USA, 2019. ACM.

[5] Amber Solomon, Mark Guzdial, Betsy DiSalvo, and Ben Rydal Shapiro. Applying a gesture taxonomy to introductory computing concepts. In *Proceedings of the 2018 ACM Conference on International Computing Education Research*, ICER '18, pages 250–257, New York, NY, USA, 2018. ACM.

[6] Miranda C. Parker, Amber Solomon, Brianna Pritchett, David A. Illingworth, Lauren E. Marguilieux, and Mark Guzdial. Socioeconomic status and computer science achievement: Spatial ability as a mediating variable in a novel model of understanding. In *Proceedings of the 2018 ACM Conference on International Computing Education Research*, ICER '18, pages 97–105, New York, NY, USA, 2018. ACM.

[7] Miranda C. Parker, Kantwon Rogers, Barbara J. Ericson, and Mark Guzdial. Students and teachers use an online AP CS Principles EBook differently: Teacher behavior consistent with expert learners. In *Proceedings of the 2017 ACM Conference on International Computing Education Research*, ICER '17, pages 101–109, New York, NY, USA, 2017. ACM.

[8] Kathryn Cunningham, Sarah Blanchard, Barbara Ericson, and Mark Guzdial. Using tracing and sketching to solve programming problems: Replicating and extending an analysis of what students draw. In *Proceedings of the 2017 ACM Conference on International Computing Education Research*, ICER '17, pages 164–172, New York, NY, USA, 2017. ACM.

[9] Barbara Ericson, Kantwon Rogers, Miranda Parker, Briana Morrison, and Mark Guzdial. Identifying design principles for CS teacher Ebooks through design-based research. In *Proceedings of the 2016 ACM Conference on International Computing Education Research*, pages 191–200. ACM, 2016.

[10] Miranda C Parker, Mark Guzdial, and Shelly Engleman. Replication, validation, and use of a language independent CS1 knowledge assessment. In *Proceedings of the 2016 ACM Conference on International Computing Education Research*, pages 93–101. ACM, 2016.

[11] Blair MacIntyre, Dingtian Zhang, Ryan Jones, Amber Solomon, Elizabeth Disalvo, and Mark Guzdial. Using projection AR to add design studio pedagogy to a CS classroom. In *2016 IEEE Virtual Reality (VR)*, pages 227–228. IEEE, 2016.

[12] Lauren E. Margulieux, Briana B. Morrison, Mark Guzdial, and Richard Catrambone. Training learners to self-explain: Designing instructions and examples to improve problem solving. In *Proceedings of Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences (ICLS) 2016*, 2016.

[13] Briana B. Morrison, Lauren E. Margulieux, Barbara Ericson, and Mark Guzdial. Subgoals help students solve Parsons Problems. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education*, SIGCSE '16, pages 42–47, New York, NY, USA, 2016. ACM.

[14] Miranda C. Parker and Mark Guzdial. Replicating a validated CS1 assessment. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education*, SIGCSE '16, pages 695–695, New York, NY, USA, 2016. ACM.

[15] Barbara Ericson, Steven Moore, Briana Morrison, and Mark Guzdial. Usability and usage of interactive features in an online Ebook for CS teachers. In *Proceedings of the Workshop in Primary and Secondary Computing Education*, WiPSCE '15, pages 111–120, New York, NY, USA, 2015. ACM.

[16] Michael S. Kirkpatrick, Janice E. Cuny, Mark Guzdial, Amanda Holland-Minkley, and Clifford A. Shaffer. Best practices for IRB approval: Four perspectives. In *Proceedings of the 46th ACM Technical Symposium on Computer Science Education*, SIGCSE '15, pages 267–268, New York, NY, USA, 2015. ACM.

[17] Barbara J. Ericson, Mark J. Guzdial, and Briana B. Morrison. Analysis of interactive features designed to enhance learning in an Ebook. In *Proceedings of the Eleventh Annual International Conference on International Computing Education Research*, ICER '15, pages 169–178, New York, NY, USA, 2015. ACM.

[18] Briana B. Morrison, Lauren E. Margulieux, and Mark Guzdial. Subgoals, context, and worked examples in learning computing problem solving. In *Proceedings of the Eleventh Annual International Conference on International Computing Education Research*, ICER '15, pages 21–29, New York, NY, USA, 2015. ACM.

[19] Barbara J. Ericson, Mark Guzdial, and Tom McKlin. Preparing secondary computer science teachers through an iterative development process. In *WiPSCE '14: Proceedings of the 9th Workshop in Primary and Secondary Computing Education*, pages 116–119, New York, NY, USA, 2014. ACM.

[20] Briana B. Morrison, Brian Dorn, and Mark Guzdial. Measuring cognitive load in introductory CS: adaptation of an instrument. In *ICER '14: Proceedings of the tenth annual conference on International computing education research*, pages 131–138, New York, NY, USA, 2014. ACM.

[21] Barbara Ericson and Mark Guzdial. Measuring demographics and performance in computer science education at a nationwide scale using AP CS data. In *SIGCSE '14: Proceedings of the 45th ACM technical symposium on Computer science education*, pages 217–222, New York, NY, USA, 2014. ACM.

[22] Mark Guzdial. Exploring hypotheses about media computation. In *ICER '13: Proceedings of the ninth annual international ACM conference on International computing education research*, pages 19–26, New York, NY, USA, 2013. ACM.

[23] Lauren E. Margulieux, Richard Catrambone, and Mark Guzdial. Subgoal labeled worked examples improve K-12 teacher performance in computer programming training. In M. Knauff, M. Pauen, N. Sebanz, and I. Wachsmuth, editors, *Proceedings of the 35th Annual Conference of the Cognitive Science Society*, pages 978–983. Cognitive Science Society, 2013.

[24] Baker Franke, Jeanne Century, Michael Lach, Cameron Wilson, Mark Guzdial, Gail Chapman, and Owen Astrachan. Expanding access to K-12 computer science education: research on the landscape of computer science professional development. In *SIGCSE '13: Proceeding of the 44th ACM technical symposium on Computer science education*, pages 541–542, New York, NY, USA, 2013. ACM.

[25] Betsy DiSalvo, Mark Guzdial, Charles Meadows, Ken Perry, Tom McKlin, and Amy Bruckman. Workifying games: successfully engaging african american gamers with computer science. In *SIGCSE '13: Proceeding of the 44th ACM technical symposium on Computer science education*, pages 317–322, New York, NY, USA, 2013. ACM.

[26] Mehran Sahami, Mark Guzdial, Fred G. Martin, and Nick Parlante. The revolution will be televised: perspectives on massive open online education. In *SIGCSE '13: Proceeding of the 44th ACM technical symposium on Computer science education*, pages 457–458, New York, NY, USA, 2013. ACM.

[27] Daniel D. Garcia, Valerie Barr, Mark Guzdial, and David J. Malan. Rediscovering the passion, beauty, joy, and awe: making computing fun again, part 6. In *SIGCSE '13: Proceeding of the 44th ACM technical symposium on Computer science education*, pages 379–380, New York, NY, USA, 2013. ACM.

[28] Steven Simmons, Betsy DiSalvo, and Mark Guzdial. Using game development to reveal programming competency. In *FDG '12: Proceedings of the International Conference on the Foundations of Digital Games*, pages 89–96, New York, NY, USA, 2012. ACM.

[29] Mark Guzdial, Barbara J. Ericson, Tom McKlin, and Shelly Engelman. A statewide survey on computing education pathways and influences: factors in broadening participation in computing. In *ICER '12: Proceedings of the ninth annual international conference on International computing education research*, pages 143–150, New York, NY, USA, 2012. ACM.

[30] Lauren E. Margulieux, Mark Guzdial, and Richard Catrambone. Subgoal-labeled instructional material improves performance and transfer in learning to develop mobile applications. In *ICER '12: Proceedings of the ninth annual international conference on International computing education research*, pages 71–78, New York, NY, USA, 2012. ACM.

[31] Briana B. Morrison, Lijun Ni, and Mark Guzdial. Adapting the disciplinary commons model for high school teachers: improving recruitment, creating community. In *ICER '12: Proceedings of the ninth annual international conference on International computing education research*, pages 47–54, New York, NY, USA, 2012. ACM.

[32] Lijun Ni and Mark Guzdial. Who AM I?: understanding high school computer science teachers' professional identity. In *SIGCSE '12: Proceedings of the 43rd ACM technical symposium on Computer Science Education*, pages 499–504, New York, NY, USA, 2012. ACM.

[33] Davide Fossati and Mark Guzdial. The use of evidence in the change making process of computer science educators. In *SIGCSE '11: Proceedings of the 42nd ACM technical symposium on Computer science education*, pages 685–690, New York, NY, USA, 2011. ACM.

[34] Michael Hewner and Mark Guzdial. How CS majors select a specialization. In *ICER '11: Proceedings of the seventh international workshop on Computing education research*, pages 11–18, New York, NY, USA, 2011. ACM.

[35] Betsy James DiSalvo, Sarita Yardi, Mark Guzdial, Tom McKlin, Charles Meadows, Kenneth Perry, and Amy Bruckman. African american men constructing computing identity. In *CHI '11: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 2967–2970, New York, NY, USA, 2011. ACM.

[36] Allison Elliott Tew and Mark Guzdial. The FCS1: a language independent assessment of CS1 knowledge. In *SIGCSE '11: Proceedings of the 42nd ACM technical symposium on Computer science education*, pages 111–116, New York, NY, USA, 2011. ACM.

[37] Henry M. Walker, Ali Erkan, Mark Guzdial, and Steve Cooper. Role and value of quantitative instruments in gauging student perspectives in a computing curriculum. In *SIGCSE '11: Proceedings of the 42nd ACM technical symposium on Computer science education*, pages 321–322, New York, NY, USA, 2011. ACM.

[38] Lijun Ni, Mark Guzdial, Allison Elliott Tew, Briana Morrison, and Ria Galanos. Building a community to support HS CS teachers: the disciplinary commons for computing educators. In *SIGCSE '11: Proceedings of the 42nd ACM technical symposium on Computer science education*, pages 553–558, New York, NY, USA, 2011. ACM.

[39] David G. Kay, Kim B. Bruce, Michael Clancy, Nell Dale, Mark Guzdial, and Eric Roberts. Recognizing the most influential cs education papers. In *SIGCSE '10: Proceedings of the 41st ACM technical symposium on Computer science education*, pages 196–197, New York, NY, USA, 2010. ACM.

[40] Mark Guzdial, David Ranum, Brad Miller, Beth Simon, Barbara Ericson, Samuel A. Rebelsky, Janet Davis, Kumar Deepak, and Doug Blank. Variations on a theme: role of media in motivating computing education. In *SIGCSE '10: Proceedings of the 41st ACM technical symposium on Computer science education*, pages 66–67, New York, NY, USA, 2010. ACM.

[41] Lijun Ni, Tom McKlin, and Mark Guzdial. How do computing faculty adopt curriculum innovations?: the story from instructors. In *SIGCSE '10: Proceedings of the 41st ACM technical symposium on Computer science education*, pages 544–548, New York, NY, USA, 2010. ACM.

[42] Michael Hewner and Mark Guzdial. What game developers look for in a new graduate: interviews and surveys at one game company. In *SIGCSE '10: Proceedings of the 41st ACM technical symposium on Computer science education*, pages 275–279, New York, NY, USA, 2010. ACM.

[43] Allison Elliott Tew and Mark Guzdial. Developing a validated assessment of fundamental CS1 concepts. In *SIGCSE '10: Proceedings of the 41st ACM technical symposium on Computer science education*, pages 97–101, New York, NY, USA, 2010. ACM.

[44] Mark Guzdial, Jane Prey, Lucy Sanders, Heikki Topi, and Joseph Urban. Report on the future of computing education summit. In *SIGCSE '10: Proceedings of the 41st ACM technical symposium on Computer science education*, pages 259–260, New York, NY, USA, 2010. ACM.

[45] Brian Dorn and Mark Guzdial. Learning on the job: characterizing the programming knowledge and learning strategies of web designers. In *CHI '10: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 703–712, New York, NY, USA, 2010. ACM.

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[70] Mark Guzdial, Greg Linden, and Tessa Lau. Sharing ideas, writing apps, and creating a professional web presence. *Commun. ACM*, 52(7):10–11, 2009.

[71] Jeannette M. Wing and Mark Guzdial. Cs woes: deadline-driven research, academic inequality. *Commun. ACM*, 52(12):8–9, 2009.

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[73] Mark Guzdial. Education paving the way for computational thinking. *Commun. ACM*, 51(8):25–27, 2008.

C.1. Submitted Journal Articles

No data

C.2. Submitted Conference Papers (Refereed)

no data

D. Other Publications and Creative Products

D.1. Technical Reports

D.1.1 Alvarado, C. Morrison, B, Ericson, B., Guzdial, M., Miller, B., and Ranum, D. (2012.) *Performance and Use Evaluation of an Electronic Book for Introductory Python Programming*. School of Interactive Computing, College of Computing, Georgia Institute of Technology. Technical Report. `http://hdl.handle.net/1853/45044`

D.1.2 Ni, Lijun & Guzdial, M. (2008.) *What makes teachers change? Factors that influence post-secondary teachers' adoption of new computing curricula.* Georgia Tech, College of Computing, School of Interactive Computing Technical Report #GT-IC-08-02. Atlanta, GA.

D.1.3 Dorn, B., Allison Elliot Tew, and Mark Guzdial. (2008.) *Computer science construct use, learning, and creative credit in a graphic design community.* Georgia Tech, College of Computing, School of Interactive Computing Technical Report #GT-IC-08-01. Atlanta, GA.

D.1.4 Landry, B. & Guzdial, M. (2004). *Supporting personal digital storytelling: From people to software*. (GVU Technical Report TR#GIT-GVU-04-22). Atlanta, GA, College of Computing/GVU.

D.1.5 Guzdial, M., & Greenlee, J. (2002). *A Computer Music Implementation Course using Active Essays* (GVU Technical Report TR #GIT-GVU-02-08). Atlanta, GA: College of Computing/GVU.

D.1.6 Collaborative Software Lab (Guzdial, K., Realff, Morley, Ludovice, et al.). (2000). *A Catalog of CoWeb Uses* (Georgia Tech GVU Center Technical Report GIT-GVU-00-19). Atlanta, Georgia: Georgia Tech GVU Center.

D.1.7 Guzdial, M. (2000). *Using Squeak for Teaching User Interface Software* (GIT-GVU-00-17). Atlanta, GA: Georgia Tech GVU Center.

D.1.8 Ashwin Ram, Richard Catrambone, Mark J. Guzdial, Colleen M. Kehoe,, D. Scott McCrickard, John T. Stasko (1998) "PML: Representing Procedural Domains for Multimedia Presentations" Georgia Institute of Technology, Graphics, Visualization, and Usability Center, Technical Report #GIT-GVU-98-20.

D.1.9 Santos P., Hudson S., Guzdial M., Badre A. (1995) "Video temporal compression techniques to facilitate usability evaluation." Georgia Institute of Technology, Graphics, Visualization, and Usability Center. Technical Report #GIT-GVU-95-17.

D.1.10 Guzdial M., Santos P., Badre A., Hudson S., Gray M. (1994) "Analyzing and Visualizing Log Files: A Computational Science of Usability." Technical Report #GIT-GVU-94-8. Georgia Institute of Technology. Graphics, Visualization, and Usability Center.

D.1.11 Guzdial, M., C. Walton, M. Konemann, and E. Soloway. (1993) "Characterizing process change using log file data." Technical Report #GIT-GVU-93-44. Graphics, Visualization, and Usability Center, College of Computing, Georgia Institute of Technology.

D.1.12 Guzdial, M. (1993) "Deriving software usage patterns from log files." Technical Report #GIT-GVU-93-41. Graphics, Visualization, and Usability Center, College of Computing, Georgia Institute of Technology.

D.2. Software

D.2.1 *MediaText.* (1992.) M. Guzdial and J. Merz. Multimedia composition software for grades 6-12. Published by Wings for Learning and distributed by Wings for Learning and Apple Computer (as part of their Multimedia Authoring kit.) MediaText appeared in an episode of the PBS television series *Innovations* on educational computing. MediaText has been reviewed in several magazines and journals including *Journal of Educational Hypermedia* and *Multimedia and Electronic Learning*. Awards: Teaching & Learning Magazine Top Six Educational Software Products of 1992, Parents' Choice Magazine Gold Award, 1992; InCider Magazine Product of the Month, 1992.

D.2.2 *CaMILE (Collaborative and Multimedia Interactive Learning Environment): NoteBase, MediaBase, Electronic Books, and Server Software*. (1994–1997.) M. Guzdial, N. Rappin, and D. Carlson. A learning environment to scaffold the process of collaboration through discussions using multimedia-annotated notes. Originally designed by Guzdial and developed by Guzdial, Rappin, and Carlson. Used by over 1000 students at Georgia Tech, and was downloaded by over 300 educational institutions around the world.

D.2.3 *CoWeb/Swiki*. (1997.) M. Guzdial and J. Rick. A toolkit for the creation of anchored collaboration environments. Over 1000 students at Georgia Tech have used CoWebs in the first six months of 1998, and over 100 external sites have downloaded the software. CoWebs have been used (and continue to be used at some locations) at Disney Imagineering, Boeing, Interval Research, University of Illinois Urbana–Champaign, University of North Carolina-Chapel Hill, University of Colorado-Boulder, Chalmers University at Göteborg (Sweden), University of Madgedburg (Germany), and the New York Stock Exchange. Awards: 1999 Progressive Architecture Design Research Citation (*Architecture Magazine* Design Research Award), 1999

American Institute of Architects Education Honor Award, and 2001 McGraw-Hill Technology Design Competition at the Computers and Writing Conference, Teaching and Learning Technologies for Rhetoric and Writing.

D.2.4 *Jython Environment for Student (JES).* (2002.) Programming environment used for media computation programming in Python. The current version, Version 5.02, has been downloaded over 40,000 times and used in schools including Georgia Tech, University of California–San Diego, US Military Academy at West Point, and Royal Melbourne Institute of Technology (Australia).

E. Presentations

E.1. Keynote Talks

E.1.1 Keynote at FabLearnDK, Spinderihallerne, Vejle, Denmark. April 25, 2019. "Computing Education as a Foundation for 21st Century Literacy."

E.1.2 Keynote at SIGCSE 2019, Minneapolis, MN. March 1, 2019. "Computing Education as a Foundation for 21st Century Literacy."

E.1.3 Keynote at *To Code and Beyond*, Cornell Tech, New York City, NY. January 11, 2019. "Computing Education as a Foundation for 21st Century Literacy."

E.1.4 Keynote at the Computational Thinking Across the University Conference, EPFL, Lausanne, Switzerland. April 21, 2018. "Improving Computing Education with Learning Sciences: Methods for Teaching Computing Across Disciplines."

E.1.5 Keynote at the Turing in China SIGCSE Conference, Shanghai, China. May 13, 2017. "Improving Success in Computer Science Education Using Lessons from Learning Sciences."

E.1.6 Keynote at the Computing at Schools 2017 (CAS 2017), Birmingham, England. June 17, 2017. "Using Learning Sciences Research to Improve Computing Teaching: Predictions, Subgoals, and Parsons."

E.1.7 Keynote at the TRESTLE Annual Meeting, Indiana University, September 2017. "Student Predictions, Mental Models and Need for Complex Problem Solving in the 21st Century."

E.1.8 Keynote at the Learning and Teaching in Computing Education (LaTICE 2016), Mumbai, India. 2016. "Learner-Centered Design of Computing Education for Everyone."

E.1.9 Keynote at the Visual Languages/Human-Centered Computing 2015 Conference, Atlanta, GA. 2015. "Requirements of a Computing-Literate Society."

E.1.10 Keynote at the 7th Workshop in Primary and Secondary Computing Education WiPSCE, Berlin. 2014. "Preparing teachers is different than preparing software developers."

E.1.11 Keynote at PKAL Atlanta Regional network meeting. 2013. "Using technology to teach interdisciplinary science while ensuring there is learning."

E.1.12 Computer Science Track Keynote speech with Barbara Ericson, Florida Council of Independent Schools. 2012. "Teaching Computing to Everyone."

E.1.13 Invited keynote speech at Western Canadian Computing Conference on Education (WCCCE) 2012. University of British Columbia. 2012. "Inspiring Computing Education with Media."

E.1.14 Invited keynote speech at International Conference on Creating, Connecting and Collaborating through Computing at University of Southern California. 2012. "Helping Everyone Create with Computing."

E.1.15 Invited keynote speech with Barbara Ericson at Sydney Conventicle, University of Newcastle, Sydney, Australia. 2011. “Technology for Teaching Computing across Campus.”

E.1.16 Invited keynote speech at Melbourne Conventicle, Swinburne University of Technology, Melbourne, Australia. 2011. “Creating Computer Science for All Students.”

E.1.17 Invited keynote speech ACM Innovation and Technology in CS Education (ITICSE), Darmstadt, Germany. 2011. “Technology for Teaching the Rest of Us.”

E.1.18 Invited keynote speech at *Pearson University Forum. Leaders in action: the new educational trends.* Mexico City, Mexico. 2011. “Meeting the Computing Needs for Everyone.”

E.1.19 Invited keynote speech at University Fundamental Computing Courses Forum, Jinan, China. 2010. “Meeting the Computing Needs for Everyone.”

E.1.20 Invited keynote speech at CCSCW:MW (Consortium for Computing Science in Colleges: Midwest), 2010. “Meeting Everyone’s Needs for Computing.”

E.1.21 Invited keynote speech at 11th Annual Conference of Higher Education Academy Subject Centre for Information and Computer Science, Durham University, UK. 2010. “Computing education for all.”

E.1.22 Invited keynote speech to the Inaugural Educational Applications of Artificial Intelligence (EAAI), 2010. “Technology for Teaching the Rest of Us.”

E.1.23 Invited keynote speech at Informatics Education Europe, Frieburg, Germany, 5 November, 2009. “Meeting EveryoneÕs Needs for Computing.”

E.1.24 Plenary Talk at Australasian Computing Education Conference, Wellington, New Zealand. 20 April 2009. “Computing Education for All.”

E.1.25 CSE50 Plenary Talk. University of Michigan, EECS Division. 2008. “Meeting the Needs of Computing Across Campus.”

E.1.26 Keynote address. Meeting of Computing and Information Science Departments, Georgia Technical Colleges, Griffin, GA. 2008. “Computing Education for All.”

E.1.27 Keynote address. Visual and Computational Teaching and Learning. College of Charleston. 2007. “Computing Education for All.”

E.1.28 Keynote address. Consortium for Computing Sciences in Colleges: Central Plains Conference, Northwest Missouri State University, Maryville, Missouri. 2006. “Teaching Computing for Everyone.”

E.1.29 Opening keynote address. Midstates Conference on Undergraduate Research in Mathematics and Computer Science. Denison University, Granville, OH. 2004. “The Role of Undergraduate Research in CS Education.”

E.1.30 Keynote Address. International Symposium on Collaborative Technologies and Systems (CTSÕ2004). San Diego, CA. 2004. “Collaborative Dynabooks: A Research Agenda on Learning with Multimedia.”

E.1.31 Invited plenary speaker at Consortium for Computer Sciences in Colleges, Southeastern Conference. November. Georgia Perimeter College, Atlanta, GA. 2003. “Introduction to Media Computation: A new CS1 approach that addresses women’s interests.”

E.1.32 Keynote Address. CALISCE’98: 4th International Conference on Computer Aided Learning and Instruction in Science and Engineering. G‘”oteborg, Sweden. 1998. “Technological Support for Project-Based Learning.”

E.1.33 Keynote Address. ACM Southeast Regional Conference. Marietta, GA. 1998. "Technological Support for an Apprenticeship-Based Computer Science Education."

E.1.34 Keynote Address. International Conference of Software Engineering Education and Training. Atlanta, GA. 1998. "Computer Support for Apprenticeship in Software Engineering."

E.1.35 Invited plenary address at the Chairs of Departments of Psychology Group annual meeting, Savannah, GA, 1997. "Technology Enhanced and Extended Learning."

E.2. Invited Lectures

E.2.1 Michigan Interactive & Social Computing Seminar, University of Michigan, February 5, 2019, "Computing Education as a Foundation for 21st Century Literacy."

E.2.2 Engineering Education Research Seminar, January 16, 2019, "Computing Education as a Foundation for 21st Century Literacy."

E.2.3 CSE Faculty Seminar, University of Michigan, December 10, 2018, "Computing Education as a Foundation for 21st Century Literacy."

E.2.4 Talks to Computing and Education at University of Massachusetts at Amherst, April 25-26, 2018. "Using Learning Sciences Research to Improve Computing Teaching: Predictions, Subgoals, and Examples+Practice" and "Research Issues around Preparing Computing Educators."

E.2.5 GVU Brown Bag, Georgia Institute of Technology, October 12, 2017, "Disrupt Education or Make It Better? The Rhetoric & Implementation of Educational Technology" with Karen Head.

E.2.6 University of Michigan, February 21, 2017. "Steps towards Universal Computational Literacy."

E.2.7 Purdue University, February 16, 2017. "Research and Teaching to Broaden Participation in Engineering."

E.2.8 Rochester Institute of Technology, October 23, 2017. "Improving Computing Education with Learning Sciences: Predictions, Subgoals, and Parsons."

E.2.9 EXCITED Center Launch, NTNU, Trondheim, Norway. January 12, 2017. "Teaching Computing with Media."

E.2.10 Michigan State University, December 7, 2016. "Meeting the Needs for a Computationally Literate Society."

E.2.11 Clemson State University, November 4, 2016. "Improving Success in Learning Computer Science Using Lessons from Learning Sciences."

E.2.12 Harvard Graduate School of Education, April 2015. "CS Teacher Education Requires Different Goals and Methods than CS Developer Education."

E.2.13 Rutgers School of Communication and Information, Library and Information Systems Speaker Series, with Barbara Ericson, December 9, 2014. "Creative Expression to Motivate Interest in Computing."

E.2.14 Invited Speaker in University of Pennsylvania's *Next Generation MOOCs* talk series. "Improving Diversity and Preparing Teachers: Dealing with the Limitations of MOOCs."

E.2.15 Annual Castle Lecture, Electrical Engineering and Computer Science Department, with Barbara Ericson. Invited speech to first year cadets. “Smaller, Faster, Cheaper: The Future of Our Digital Society.”

E.2.16 HCIL 30th Anniversary Distinguished Lecture Series, U. Maryland-College Park, 19 February 2013. “Making On-Line Education Work.”

E.2.17 Tufts STEM Education Lecture Series. 10 December 2012. “Computing Education for Everyone.”

E.2.18 Invited lecture at Stanford University. 4 December 2012. “On-Line Computer Science Education.”

E.2.19 MIT CSAIL HCI Seminar. 30 November 2012. “What We Know About Teaching Computer Science: On-Line or In-Classroom (Answer: Not all that much).”

E.2.20 NASA Goddard Space Flight Center Information Science and Technology (IS&T) Colloquium. 28 November 2012. “Helping Everyone Create with Computing.”

E.2.21 University of Adelaide (Australia), 22 November 2011. “Introducing computing with media, with a pedagogical side tour.”

E.2.22 Distinguished Lecture, Rutgers University, 18 October 2011. “Technology for teaching the majority about Computer Science.”

E.2.23 University of Toronto. 22 November 2010. “Meeting the Computing Needs for everyone.”

E.2.24 University of Kentucky. 24 March 2010. “Computing Education for All.”

E.2.25 Rochester Institute of Technology. 5 January 2010. “Computing Education for All.”

E.2.26 University of Maryland. June 2009.“Challenges in Computing Education Research.”

E.2.27 Microsoft Research Faculty Summit talk, July 2009.“Institute for Personal Robotics in Education, First Phase Report.”

E.2.28 Ebey Lecture at University of the South in Sewanee, TN. Oct 2008. ”Computer Science: A Very Liberal Art.”

E.2.29 Wayne State University, Oct 6, 2008. “Context in CS Education.”

E.2.30 Microsoft Research Faculty Summit talk. July 2008. ÒContextualized Computing Education.Ó July 2008. (Top-ranked talk by attendee survey.)

E.2.31 University of British Columbia, Computer Science Department. Nov 2007. “Computing Education for All.”

E.2.32 Wake Forest. April 2005. “Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech.”

E.2.33 Georgia Perimeter College. Feb 2007. “Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech.”

E.2.34 Colorado School of Mines. Feb 2007. “Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech.”

E.2.35 Florida State University, College of Information, Research Colloquia. March 2005. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech."

E.2.36 Blekinge Institute of Technology, Karlskrona, Sweden. March 2005. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech."

E.2.37 Bowling Green State University, July 2005. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech."

E.2.38 Hope College, July 2005. "Collaborative Dynabooks: A research agenda for learning over cooperative networks."

E.2.39 Workshop at ACM SIGCSE 2005 (peer-reviewed), March, 2005. "Multimedia Construction Projects."

E.2.40 Ohio State University, Dec 2004. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech."

E.2.41 Denison University, Oct 2004. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors: Inventing a new approach to computing education at Georgia Tech."

E.2.42 Georgia Department of Education, Business and Information Technology Fall Professional Development Conference, 2004. "Multimedia Approach to Teaching Computer Programming."

E.2.43 Georgia Tech Advisory Board, Oct 2004. "Developments in Teaching CS Introductory Courses."

E.2.44 University of Central Florida, Sept 2004. "Collaborative Dynabooks: A research agenda for learning over cooperative networks."

E.2.45 University of Washington, May 2004. "Collaborative Dynabooks: A Research Agenda on Building Systems to Support Learning through Multimedia."

E.2.46 Workshop for the IMPACT program, for the University System of Georgia Board of Regents, April 2004. "Collaboration and cooperation in higher education: Research and Applications."

E.2.47 Albany State University, April 2004. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors."

E.2.48 Georgia State University, March 2004. "Collaborative Dynabooks: A Research Agenda on Building Systems to Support Learning through Multimedia."

E.2.49 Workshop at ACM SIGCSE 2004 (peer-reviewed), March, 2004. "Multimedia Construction Projects."

E.2.50 University of Illinois-Chicago, 2004. "Collaborative Dynabooks: A Research Agenda on Building Systems to Support Learning through Multimedia" and "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors."

E.2.51 University of Virginia, Feb. 2004. "Constructing Media as a Context for Teaching Computing and Motivating Women and Non-Majors."

E.2.52 Workshop on Women and Minorities in Computer Science, University of Colorado-Boulder, August 2003. "Providing a Context to Motivate Non-Majors into Computing."

E.2.53 DePauw University, April 2003. “Squeak: Back to the Future.”

E.2.54 Workshop at ACM SIGCSE 2003 (peer-reviewed), February, 2003. “Multimedia Construction Projects.”

E.2.55 University System of Georgia Academic Advisory Committee on Computing Disciplines, January, 2003. “Media computing as a context for learning computation.”

E.2.56 MIT Media LabÕs Okawa Lunch Talk, April 2002. “Towards Collaborative Dynabooks in Squeak.”

E.2.57 University of Central Florida, April 2002. “Towards Collaborative Dynabooks.”

E.2.58 Allegheney College, November 2001. “Squeak: Back to the Future.”

E.2.59 Old Dominion University, November 2001. “Towards Collaborative Dynabooks.”

E.2.60 The National Design Experiments Consortium, Education Development Center, April, 1996. “Using the Web in Graduate Courses.”

E.2.61 Clark Atlanta University, Computer Science Department Colloquium, November, 1995. “Scaffolding and Contextualize Environment for Learning.”

E.2.62 IBM T.J. Watson Research Center, Yorktown Heights, NY, June, 1995. “Scaffolded and Contextualized Programming Environments for Learning.”

E.2.63 Education in Mathematics, Science, and Technology Colloquium, University of California at Berkeley, Berkeley, CA, April, 1995. “Supporting Project-Based Learning through Scaffolding and Context-Setting.”

E.2.64 Invited presentation at NSF Engineering Education Scholars Workshop, Georgia Tech, July, 1995.

E.2.65 Computer Science Colloquium, George Washington University, Washington, DC, November, 1994. “Scaffolded and Contextualized Programming Environments for Learning.”

E.2.66 School of Architecture, Georgia Institute of Technology, October, 1994. “Learning, Teaching, and Technology.”

E.2.67 Mitsubishi Electric Research Laboratory, Cambridge, MA, June, 1994. “Supporting learning through computational science.”

E.2.68 EduTech Week, Georgia Institute of Technology, Atlanta, GA, December, 1993. With Jorge A. Vanegas. “An Integrated Multimedia Support System for Sustainable Development Technology.”

E.2.69 Technical Educational Research Center (TERC), Cambridge, MA, March, 1993. “Design Support Environments: Interfaces for Learners.”

E.2.70 Institute for the Learning Sciences, Northwestern University, Evanston, IL, February, 1993. “Design Support Environments: Interfaces for Learners.”

F. Grants and Contracts

F.1. As Principal Investigator

F.1.1 **Collaborative Research: A New Computer Science Faculty Teaching Workshop**
Sponsor: NSF IUSE
Investigator(s): Beth Simon and Leo Porter (UCSD), Cynthia Bailey Lee (Stanford), and Mark Guzdial
Amount: *$75K (to GT)*
9/1/14–6/30/19

F.1.2 **Creating High-Completion CS Online Learning Using Educational Psychology Principles**
Sponsor: NSF IUSE
Investigator(s): Mark Guzdial and Barbara Ericson
Amount: *$400K*
10/1/14–9/31/18

F.1.3 **Collaborative Research: Special Projects (CNS): BPC-A: Expanding Computing Education Pathways (ECEP) Alliance**
Sponsor: NSF BPC
Investigator(s): Mark Guzdial (PI) and Barbara Ericson (Partner: U. Mass-Amherst, PI: Rick Adrion, Co-PI: Renee Fall)
Amount: *$6.2M ($3.7M to Georgia Tech)*
10/1/12–9/30/18

F.1.4 **Using Instructional Design Techniques to Create Distance CS Education to Support In-Service Teachers**
Sponsor: NSF – Computing Education in the 21st Century (CE21)
Investigator(s): Mark Guzdial and Barbara Ericson
Amount: *$978,182*
9/1/11–8/31/14

F.1.5 **Support for Davide Fossati as a CI Fellow**
Sponsor: CRA CI Fellows Program
Investigator(s): Mark Guzdial and Davide Fossati
Amount: *$140,000*
8/15/09–8/14/10

F.1.6 **Collaborative Research: Extending "Georgia Computes!": A Statewide Vertical Alliance to Broaden Participation through Innovative, Inviting, and Relevant Computing Education**
Sponsor: NSF BPC
Investigator(s): Mark Guzdial (PI), Amy Bruckman, Barbara Ericson
Amount: *$1,372,296*
9/1/09–8/31/11

F.1.7 **Operation Reboot: Transforming Unemployed IT Workers into High School Computing Teachers**
Sponsor: NSF BPC
Investigator(s): Barbara Ericson (PI), Mark Guzdial (co-PI)
Amount: *$2,499,917*
9/1/09–8/31/12

F.1.8 **Personal Robots for CS1: Next Steps for an Engaging Pedagogical Framework**
Sponsor: NSF CCLI

Investigator(s): Mark Guzdial and Tucker Balch (collaborative with Bryn Mawr College, Doug Blank and Deepak Kumar)
Amount: *$500K*
8/15/09–8/14/11

F.1.9 **BPC-DP: Testers to Techies: Culturally Aware and Authentic Computing Education through Game Testing**
Sponsor: NSF BPC
Investigator(s): Amy Bruckman (PI), Mark Guzdial
Amount: *$404K*
12/01/08–11/31/11

F.1.10 **CPATH CB: Improving computing education by developing regional communities of computing educators**
Sponsor: NSF CPATH
Investigator(s): Mark Guzdial
Amount: *$517K*
09/01/08–08/31/11

F.1.11 **Establishing an Educational Robotics Research Institute**
Sponsor: Microsoft Research
Investigator(s): Tucker Balch (PI), Mark Guzdial
Amount: *$1.4M*
9/1/06–8/31/08

F.1.12 **Statewide Vertical Alliance to Broaden Participation Through Innovative, Inviting, and Relevant Computing Education**
Sponsor: NSF Broadening Participation in Computing (BPC)
Investigator(s): Mark Guzdial (PI), Amy Bruckman, Maureen Biggers
Amount: *$2.1M*
8/1/06–7/31/09

F.1.13 **SoD-HCER: Contextualized Design Education for Professionals from Non-Computing Disciplines**
Sponsor: NSF Science of Design
Investigator(s): Mark Guzdial
Amount: *$137,114K*
9/1/06–8/31/09

F.1.14 **CCLI: Using Media Computation to Attract and Retain Students in Computing**
Sponsor: NSF CCLI
Investigator(s): Mark Guzdial
Amount: *$409K*
9/1/06–8/31/09

F.1.15 **Collaborative Research: Alice and Media Computation**
Sponsor: NSF DUE CCLI
Investigator(s): Steve Cooper, Barbara Ericson, Wanda Dann, Barbara Moskal, Mark Guzdial
Amount: *$107,216 to Georgia Tech ($500K overall)*
9/1/06–8/31/09

F.1.16 **Collaborative Research: Assessing concept knowledge and attitudes in introductory computer science courses**
Sponsor: NSF ASA
Investigator(s): Barbara Moskal (Colorado School of Mines), Wanda Dann (Ithaca College),

Steve Cooper (St. Joseph), Mark Guzdial
Amount: *$127,000 to Georgia Tech ($500K project)*
9/1/05–8/31/08

F.1.17 **Providing access to ACM International Computing Education Research Workshop 2005 (Travel grants to participants)**
Sponsor: NSF DUE
Investigator(s): Mark Guzdial
Amount: *$7,500*
7/15/2005–12/1/2005

F.1.18 **Introduction to Media Computation: A new CS1 approach aimed at non-majors and under-represented populations**
Sponsor: NSF CISE: Education Innovations
Investigator(s): Mark Guzdial
Amount: *$251,000 (REU funding $5,625)*
8/15/03–8/14/06

F.1.19 **Media Computation as a Motivation and Structure for a Non-Majors CS1 Class: "Data-First" Computing**
Sponsor: NSF DUE-CCLI
Investigator(s): Mark Guzdial
Amount: *$75,000*
9/1/02–8/31/04

F.1.20 **Developing *Introduction to Media Computation***
Sponsor: Georgia Tech "Al West Fund"
Investigator(s): Mark Guzdial
Amount: *$35,000*
9/1/02–8/31/03

F.1.21 **Supporting a media-focused computational curriculum**
Sponsor: GVU Seed Grant
Investigator(s): Guzdial, Jay Bolter (LCC), Diane Gromala (LCC)
Amount: *$36,000 (one 12-month GRA)*
9/1/02–8/31/03

F.1.22 **Scaffolded Work Environments for Learning**
Sponsor: NSF (CISE-ITR)
Investigator(s): Elliot Soloway (PI, U.Michigan), Edelson, Reiser (Northwestern), Moher, Johnson (U. Chicago-Ill.), Guzdial (GaTech)
Amount: *$2,999,999 subcontract to Georgia Tech, $350,000*
1/1/01–12/31/03

F.1.23 **Ectropic Design: Intelligent Collaboration Spaces for Open Software**
Sponsor: NSF (CISE)
Investigator(s): Spencer Rugaber and Mark Guzdial
Amount: *$200,000*
1/1/01–12/31/02

F.1.24 **Cost-Effective Uses of the CoWeb Collaborative Learning Technology to Improve Higher Education**
Sponsor: Mellon Foundation
Investigator(s): Mark Guzdial
Amount: *$240,000*
1/1/00–5/31/02

F.1.25 **Integrating Learning Across Undergraduate Engineering Curriculum through Technology-Supported Collaboration**
Sponsor: NSF REPP
Investigator(s): Mark Guzdial, Matthew Realff, Pete Ludovice, Tom Morley
Amount: *$620,000*
1/1/99–12/31/02

F.1.26 **Effective Computer Aided Design in the Engineering Curriculum**
Sponsor: University of Georgia System Board of Regents Teaching and Learning Grant
Investigator(s): Pete Ludovice, Matthew Realff, Mark Guzdial
Amount: *$14,000*
12/1/97–7/1/98

F.1.27 **Reconfiguring Studio Design Processes Using Web-Based Case Libraries**
Sponsor: University of Georgia System Board of Regents Teaching and Learning Grant
Investigator(s): Craig Zimring, Sabir Khan, Mark Guzdial, Hazem El-Sabbagh
Amount: *$23,000*
12/1/97–7/1/98

F.1.28 **An EduTech Project Website**
Sponsor: Georgia Tech Foundation
Investigator(s): Chuck Eastman, Wendy Newstetter, and Mark Guzdial
Amount: *$61,000*
8/1/97–7/30/98

F.1.29 **A Design Education Center: Using Cognitive Science and Technology to Facilitate Learning and Doing Design**
Sponsor: NSF (CRLT)
Investigator(s): Janet Kolodner, Mark Guzdial
Amount: *$50,000*
10/1/96–9/30/97

F.1.30 **Learning by Design: Integrating and Enhancing the Middle School Math, Science, and Technology Curricula**
Sponsor: NSF (EHR–Curriculum Materials Development)
Investigator(s): Janet Kolodner, Joanna Fox, Mark Guzdial
Amount: *$1,200,000*
5/15/96–4/30/99

F.1.31 **Working Symposium of New Information Technology and Education: A Research Agenda**
Sponsor: NSF (CISE-Cross-Program)
Investigator(s): Fred W. Weingarten, Mark Guzdial
Amount: *$168,000 (to Computing Research Association)*
9/1/95–8/31/96

F.1.32 **Collaborative Learning based on Real-World, Engineering-Related Tasks**
Sponsor: ARPA–DODDS
Investigator(s): Janet Kolodner, Mark Guzdial
Amount: *$475,000*
8/1/95–7/31/97

F.1.33 **Using Cognitive Principles to Design Multimedia Training Environments**
Sponsor: Office of Naval Research
Investigator(s): Richard Catrambone, Mark Guzdial, Ashwin Ram, John Stasko

Amount: *$360,000*
6/1/95–5/31/98

F.1.34 **Integrating Programming into Engineering Education through Context-Setting and Scaffolding**
Sponsor: NSF CAREER-EHR *(first Education Career award in program)*
Investigator(s): Mark Guzdial
Amount: *$102,706*
6/15/95–6/14/98

F.1.35 **Simulated Environments for Learning Real World Contexts in Chemical Engineering**
Sponsor: EduTech Institute, Georgia Institute of Technology
Investigator(s): Mark Guzdial, William Ernst, Peter Ludovice, Matthew Realff, Dennis Sonol
Amount: *$17,600*
3/28/95–6/30/96

F.1.36 **Multimedia Support for Introductory and Advanced Computer Science Education**
Sponsor: National Science Foundation (CISE - Education Infrastructure)
Investigator(s): James Foley, John Stasko, and Mark Guzdial
Amount: *$232,835*
9/1/94–8/31/97

F.1.37 **Usability Analysis and Visualization Tools**
Sponsor: Intel Corporation
Investigator(s): Albert Badre, Mark Guzdial, and Scott Hudson
Amount: *$64,000*
5/1/94–4/30/95

F.1.38 **Development of an Integrated and Collaborative Design-Learning Simulator**
Sponsor: EduTech Institute, Georgia Institute of Technology
Investigator(s): Mark Guzdial, David Rosen, Janet K. Allen, and Farrokh Mistree
Amount: *$26,262*
6/1/94–5/30/95

F.1.39 **An Integrated Multimedia Support System for Teaching Sustainable Development and Technology using a Problem Based, Case Based, and Collaborative Learning and Reasoning Approach**
Sponsor: EduTech Institute, Georgia Institute of Technology
Investigator(s): Jorge Vanegas and Mark Guzdial
Amount: *$23,163*
7/1/93–5/31/94

F.2. As Senior Personnel or Contributor

F.1.1 **Curriculum for Sustainable Development**
Sponsor: GE
Investigator(s): John White (Engineering), Jorge Vanegas (CE) with consulting faculty Mark Guzdial and Janet Kolodner
Amount: *$964,000*
Funded: 1/1/94–12/31/96

F.2. Pending

F.3. Proposals Submitted But Not Funded (last two years)

F.3.1 **Collaborative Research: Moving Research Innovations into Computing Education Practice: Developing a model for diffusion and adoption of evidence-based practices in Computer Science**
Sponsor: NSF IUSE
Investigator(s): Mark Guzdial, Barbara Ericson, Briana Morrison (U-Nebraska, Omaha)
Amount: *$1,776,207*
Submitted: *Requested: 8/1/18–7/31/22 (1.0 summer support)*

F.3.2 **Scaffolding Inquiry-Based Data Science and Simulation Programming for Learning Economics through Board Games**
Sponsor: NSF Cyberlearning for Work at the Human-Technology Frontier
Investigator(s): Mark Guzdial
Amount: *$653,236.00*
Submitted: *Requested:9/1/18–8/31/22 (0.5 summer support)*

F.3.3 **Inquiry-based Learning about Economic Systems using Discrete Event Simulations**
Sponsor: NSF Cyberlearning
Investigator(s): Mark Guzdial
Amount: *$492,633.00*
Submitted: *Requested: 9/1/17–8/31/20 (0.5 summer support)*

F.3.4 **Developing and Disseminating Interactive Ebooks and Active Learning to Improve Undergraduate Computing Education**
Sponsor: NSF IUSE
Investigator(s): Barbara Ericson, Brad Miller (Luther College), Paul Resnick (UMich), Mark Guzdial
Amount: *$968,680.00*
Submitted: *Requested: 9/1/17–8/31/18 (0.5 summer support)*

F.3.5 **Collaborative Research: Empowering 100 Million People to Code**
Sponsor: NSF Expeditions
Investigator(s): Steve Cooper (UNL), Andy Ko (UW), Tiffany Barnes (NCSU), Susanne Hambrusch (Purdue), Lori Pollock, and Mark Guzdial
Amount: *$10,000,000 ($988,907.00 GT share)*
Submitted: *Requested: 01/01/2018–12/31/2023 (0.5 summer support)*

G. Other Professional Activities

G.1. Consulting (last two years)

- **Consultant**, *Human Augmented Research Consortium (HARC)*, Y Combinator Research, 2016–2017.
- **Advisor**, *BASICS Study (Barriers and Supports to Implementing Computer Science)*, University of Chicago. 2014–2015.
- **Advisor**, *Beyond Marketing to Stealth Recruitment: Creating ICT Pathways from High School to College and Work for Underrepresented Groups*, ETR. 2014–2016.

V. Teaching

A. Courses Taught (Last Six Years)

Term	Course Number and Title	N	Notes
Spring 2019	EECS 498/598 Computer Science Education Research	22 (11 in each undergrad and grad)	
Fall 2018	EECS 493 User-Interface Software Development	120	
Spring 2018	CS1315: Introduction to Media Computation	221	
	CS 8801: Special Topics: Learning Sciences & Technologies Research	5	
Fall 2017	CS 6461: Computing Education Research	17	
	CS 8802: Special Topics: STEM Education Research	5	
Summer 2017	CS 3750: User Interface Design	36	(Study Abroad, Barcelona)
	CS 4001: Computing and Society	39	
Spring 2017	CS 1315: Introduction to Computational Media	208	
	CS 8801: Special Topics: Learning Sciences & Technologies Research	5	
Fall 2016	CS 6451: Human-Centered Computing	9	
	CS 8802: Special Topics: STEM Education Research	6	
Spring 2016	CS 1315: Introduction to Computational Media	164	
	CS 8801: Special Topics: Learning Sciences & Technologies Research	5	
Fall 2015	CS 8003: Computer Science Education Research	15	
	CS 8802: Special Topics: STEM Education Research	5	
Spring 2015	CS 1315: Introduction to Computational Media	110	
	CS 8801: Special Topics: Learning Sciences & Technologies Research	5	
Fall 2014	CS 4912: Senior Design Capstone Project: Computational Media	29	
	CS 8802: Special Topics: STEM Education Research	9	
Spring 2014	CS 1315: Introduction to Computational Media	150	
	CETL 8801: Advanced Graduate TA Preparation	24	
	CETL 8000: Graduate Teaching Assistant Preparation	24	
Fall 2013	CS 4912: Senior Design Capstone Project: Computational Media	26	
	CETL 8801: Advanced Graduate TA Preparation	21	
	CETL 8000: Graduate Teaching Assistant Preparation	25	
Spring 2013	CS 1316: Representing Structure & Behavior	15	

B. Individual Student Guidance

B.1. Postdoctoral Fellows

Davide Fossati CoC, Computing Innovation Fellow *2009–2010*

Assistant Teaching Professor, Carnegie-Mellon University (Qatar)
Formative assessment tools for teachers

Amnon Shabo CoC, co-advised with John Stasko *1995–1997*
Research Advisor, Haifa University
Multimedia Courseware

Roland Hübscher CoC, co-advised with Janet Kolodner *1995–1997*
Associate Professor, Bentley University
Computer-supported collaborative learning environments

B.2. Ph.D. Students

Ph.D. Students: Graduated

Noel Rappin (CS) *1998*
Independent consultant and author
Dissertation: A Framework for Teaching Learners To Model by Focusing Complexity of Modeling and Simulation Tools.

Jennifer Turns (ISyE, co-advised) *1999*
Professor at the University of Washington-Seattle.
Dissertation: The Reflective Learner.

Colleen Kehoe CS *2001*
Office of Sponsored Programs, University of Illinois at Chicago
Dissertation: Supporting Critical Design Dialog

Jochen Rick CS *2007*
Self-employed consultant
Dissertation: Personal Home Pages in academia: The medium, its adopters, and their practices.

Brian Landry CS *2009*
Research Scientist for Accenture
Dissertation: Storytelling for Digital Photographs: Supporting the Practice, Understanding the Benefit.

Allison Elliott Tew CS *2010*
Research Scientist, University of Washington–Tacoma
Dissertation: Assessing Fundamental Introductory Computing Concept Knowledge in a Language Independent Manner.

Brian Dorn CS *2010*
Associate Professor of Computer Science, Union Pacific Community Chair of Computer Science Education, University of Nebraska–Omaha
Dissertation: A Case-Based Approach for Supporting the Informal Computing Education of End-User Programmers.

Lijun Ni HCC *2011*
Consultant
Dissertation: Building Professional Identity as CS Teachers: Supporting Secondary CS Teachers through Reflection and Community Building.

Mike Hewner HCC *2012*
Assistant Professor, Rose-Hulman Institute of Technology
Dissertation: Student conceptions about the field of Computer Science.

Briana Morrison HCC *2016*
Assistant Professor, University of Nebraska – Omaha
Dissertation: Using Cognitive Load Theory to Inform Computer Science Instruction

Ph.D. Students: Current

Miranda Parker HCC *started 2014*
Awards: National Science Foundation Graduate Research Fellowship 2014–2017

Amber Solomon HCC *started 2015*
Awards: Advance Fellowship 2015–2020, Sloan Fellowship 2017–2020

Kathryn Cunningham HCC *started 2016*
Awards: SIGCSE 2018 Best Paper Award

Bahare Naimipour EER *started Jan 2019*

B.3. Selected M.S. students

Keshav Khullar Data Science *2019*
Visualization Software for Social Science Teachers

Bobby Matthew CS *2009*
Usability Evaluation for JES

David Joyner CS *2008–2009*
Assessing Computing Knowledge in High School

Jill Donnelly HCI *2010–2009*
Understanding African-American Participation in AP CS Level A

Anusha Panyala CS *2012 (co-supervised with Barbara Ericson)*
Adding audio tours to the Runestone Interactive ebook.

Vipul Thakur HCI *2012–2014 (co-supervised with Barbara Ericson)*
Adding collaboration and annotation support to Runestone ebooks.

Kantwon Rogers HCI *2017–2018*
Design to reduce stereotype threat in CS classes

Brianna Pritchett HC *2017–2018*
Ebook Instructor Dashboard for Large Classes

B.4. Undergraduate Research Option Students

Letao Chen CSE *2019*
MATLAB for Pre-Calculus Learning

Nigel Charleston CS *2019*
Pyret for Pre-Calculus Learning

Veronica Day CS *2019*
Developing a functional version of Media Computation: Mac OS X

Audrey Zhang CS *2019*
Developing a functional version of Media Computation: Windows

Steven Moore CS *2014*
Thesis: Designing an Effective Interactive E-Book for Computer Science Education

Tamara Corbett CS *2014*
Thesis: Studying Teachers' Opinions about the Use of Pixel Spreadsheet to Teach Computing Literacy

B.5. Service on Thesis or Dissertation Committees

Ph.D. Examining Committee – External.

1. Michael Caspersen, CS, University of Aarhus, 2007.
Thesis Title: "Educating Novices in The Skills of Programming"
Principal Advisor: Ole Lehrmann Madsen

2. Juha Sorva, CS,Aalto University, 2012.
Thesis Title: "Visual Program Simulation in Introductory Programming Education"
Principal Advisor: Lauri Malmi

3. Turadg Aleahmad, HCI,Carnegie Mellon University, 2012.
Thesis Title: "Improving studentsÕ study practice through the design of research probes"
Principal Advisor: Ken Koedinger and John Zimmerman

4. Wade Fagen, CS, U. Illinois Urbana-Champaign, 2012.
Thesis Title: "Development and deployment of educational software applications for a heterogeneous set of consumer pen- and touch- enabled devices"
Principal Advisor: Sam Kamin

5. Rainalee Mason, Business, Southern Cross University, 2012.
Thesis Title: "Designing Introductory Programming Courses: The Role of Cognitive Load"
Principal Advisor: Dr Graham Cooper and Dr Bruce Armstrong

6. Thomas Park, Computing and Informatics, Drexel, 2014.
Thesis Title: "openHTML: Assessing Barriers and Designing Tools for Learning Web Development"
Principal Advisor: Andrea Forte

7. Michael Lee, Informatics, University of Washington–Seattle, 2014.
Thesis Title: Gidget: An Online Debugging Game for Computing Education
Principal Advisor: Andrew Ko

8. Yogendra Pal, Educational Technology, IIT-Bombay, 2016.
Thesis Title: A Framework for Scaffolding to Teach Vernacular Medium Learners
Principal Advisor: Sridhar Iyer

9. Andrew Sorensen, CS PhD, The Australian National University, 2017.
Thesis Title: Extempore: The design, implementation and application of a cyber-physical programming language
Principal Advisor: Henry Gardner

10. Elizabeth Patitsas, CS PhD, University of Toronto, 2018.
Thesis Title: Computing as Literacy: Policy factors affecting broadening participation in computer science education
Principal Advisor: Steve Easterbrook, Michelle Craig

Ph.D. Examining Committee – Defended.

1. Jim Pitkow, CS, 1997.
   Thesis Title: "Characterizing WWW Information Ecologies"
   Principal Advisor: Jim Foley

2. Scott McCrickard, CS, 2000.
   Thesis Title: "Internet Information Monitoring and Display"
   Principal Advisor: John Stasko

3. Alex Zhang, CS, 2000.
   Thesis Title: "Technological support for communities"
   Principal Advisor: John Stasko

4. Jennifer Mankoff, CS, 2001.
   Thesis Title: "Toolkit support for correcting user errors"
   Principal Advisor: Gregory Abowd and Scott Hudson

5. Jason Brotherton, CS, 2001.
   Thesis Title: "Enriching Everyday Activities through the Automated Capture and Access of Live Experiences"
   Principal Advisor: Gregory Abowd

6. Jason Ellis, CS, 2003.
   Thesis Title: "Palaver Tree Online: Technological Support for Classroom Integration of Oral History"
   Principal Advisor: Amy Bruckman

7. Khai Truong, CS, 2005.
   Thesis Title: "INCA: An Infrastructure for Capture & Access - Supporting the Generation, Preservation and Use of Memories from Everyday Life"
   Principal Advisor: Gregory Abowd

8. Heather Richter, CS, 2005.
   Thesis Title: "Designing and Evaluating Meeting Capture and Access Services"
   Principal Advisor: Gregory Abowd

9. Jim Rowan, CS, 2005.
   Thesis Title: "Digital Family Portraits, Support for Aging in Place"
   Principal Advisor: Beth Mynatt

10. Jim Hudson, CS, 2005.
    Thesis Title: "Designing for participation: How social and environmental factors influence educational discussions"
    Principal Advisor: Amy Bruckman

11. Joe Tullio, CS, 2005.
    Thesis Title: "Exploring the Design and Use of Forecasting Groupware Applications with an Augmented Shared Calendar"
    Principal Advisor: Beth Mynatt

12. Lonnie Harvel, CS, 2005.
    Thesis Title: "Using Student-Generated Notes as an Interface to a Digital Repository"
    Principal Advisor: Gregory Abowd

13. Jakita Owensby, CS, 2006.
Thesis Title: "Exploring the Development and Transfer of Case Use Skills in Middle-School Project-Based Inquiry Classrooms"
Principal Advisor: Janet Kolodner

14. Kristin Lamberty, CS, 2007.
Thesis Title: "Getting and Keeping Children Engaged with a Constructionist Design Tool for Craft and Math"
Principal Advisor: Janet Kolodner

15. Gillian R. Hayes, CS, 2007.
Thesis Title: "Documenting and Understanding Everyday Activities through the Selective Archiving of Live Experiences"
Principal Advisor: Gregory Abowd

16. Kris Nagel, CS, 2006.
Thesis Title: "Using availability indicators to enhance context-aware family communication applications"
Principal Advisor: Gregory Abowd

17. James Eagan, CS, 2008.
Thesis Title: "The buzz: supporting extensively customizable information awareness applications"
Principal Advisor: John Stasko

18. Chris Plaue, CS, 2009.
Thesis Title: "Exploring and visualizing the impact of multiple shared displays on collocated meeting practices"
Principal Advisor: John Stasko

19. Steven Dow, CS, 2008.
Thesis Title: "Understanding User Engagement in Immersive and Interactive Stories"
Principal Advisor: Blair MacIntyre

20. Jason Day, Human-Centered Computing (HCC), 2008.
Thesis Title: "Investigating Learning with Web Lectures"
Principal Advisor: Jim Foley

21. Jessie Zolna, Psychology, 2008.
Thesis Title: "Two stage process model of learning from multimedia: guidelines for design"
Principal Advisor: Richard Catrambone

22. Jose Zagal, CS, 2008.
Thesis Title: "Supporting Learning About Games"
Principal Advisor: Amy Bruckman

23. Andrea Forte, HCC, 2009.
Thesis Title: "Learning in Public: Information Literacy and Participatory Media"
Principal Advisor: Amy Bruckman

24. Christina Gardner, CS, 2011.
Thesis Title: "Supporting cognitive engagement in a learning-by-doing learning environment: case studies of participant engagement and social configurations in kitchen science investigators"
Principal Advisor: Janet Kolodner

25. Tamara Clegg, CS, 2010.
Thesis Title: "Kitchen science investigators: promoting identity development as scientific reasoners and thinkers"
Principal Advisor: Janet Kolodner

26. Valerie Henderson Summet, CS, 2010.
Thesis Title: "Facilitating communication for deaf individuals with mobile technologies"
Principal Advisor: Thad Starner

27. Keith Bujak, Psychology, 2010.
Thesis Title: "A framework of passive-active-constructive study techniques: a divergence between assigned and reported behaviors"
Principal Advisor: Richard Catrambone

28. Erika Poole, HCC, 2010.
Thesis Title: "Supporting Advice Sharing for Technical Problems in Residential Settings"
Principal Advisor: Keith Edwards

29. Danny Cabellero, Physics, 2011.
Thesis Title: "Extending and Evaluating a Novel Course Reform of introductory Mechanics"
Principal Advisor: Michael Schatz

30. Sarita Yardi, HCC, 2012.
Thesis Title: "Boundaries in Social Media: Supporting Parents in Managing Youth's Social Media Use"
Principal Advisor: Amy Bruckman

31. Kimberly Weaver Xu, HCC, 2012.
Thesis Title: "Facilitating American Sign Language Learning for Hearing Parents of Children Via Mobile Devices"
Principal Advisor: Thad Starner

32. Betsy DiSalvo, HCC, 2012.
Thesis Title: "Glitch Game Testers: The Design and Study of a Learning Environment for Computational Production with Young African-American Men"
Principal Advisor: Amy Bruckman

33. Chris Parnin, CS, 2012.
Thesis Title: "Supporting Interrupted Programming Tasks with Memory-Based Suspension and Recovery Aids"
Principal Advisor: Spencer Rugaber

34. David Joyner, HCC, 2014.
Thesis Title: "Metacognitive Tutoring for Inquiry-Driven Modeling"
Principal Advisor: Ashok Goel

C. Other Teaching Activities

CETL 8801 Advanced Graduate TA Preparation: Developed Fall 2013. PhD students in their second term of teaching take this course for greater depth in understanding learning theories (especially for transfer and for distinguishing novice and expert behavior), teaching philosophies, education research, and instructional design practices.

CS4912 Senior Design for Computational Media: Developed and approved Fall 2013. Required course for computational media majors, preparing them for team-based design and development for

a real customer. Emphasis on learning Scrum, using Agile methods, and team-based development. Includes talks on design and development practices from employers who hire CM majors.

CS 1316 Representation of Structure and Behavior: Developed and approved Spring 2004. Introduction to data structures and object-oriented programming in Java. CS1316 and CS1315 are together considered equivalent to CS1321, allowing students through this path to progress towards a CS major or minor or a Computational Media major.

CS 1315 Introduction to Media Computation: Developed and approved Fall 2002. Introduction to computation (algorithmic thinking, data structures, data transformation and processing, and programming) in a media and communication context. Approved for meeting the computing literacy requirement at Georgia Tech. 11 programs, including the College of Design, Scheller College of Business, and most of the Ivan Allen College of Liberal Arts.

CS 6397 Educational Technology: Developed and approved Fall 1995 Introduction to educational technology. Review of philosophies/approaches (apprenticeship, tutoring), technologies (collaborative learning, multimedia), issues impacting effective use of technology (teachers, classroom culture), and assessment.

CS 6398 Design & Analysis of Educational Software: Developed and approved Fall 1995 Student teams design, implement, and analyze educational software. Topics include educational software types, design approaches, and formative evaluation techniques (interviews, log file analysis).

CS4670 and CS7567 Computer-Supported Collaborative Learning (Graduate and undergraduate versions. Introduction to theory, practice, implementation, and evaluation of computer-supported collaborative learning. Undergraduate and graduate versions of the course are defined and will be taught concurrently.

CS4803 Special Topics: Computer Music Implementation (with Jim Greenlee) Students review and implement various synthesis methods including additive, subtractive, frequency modulation, and sampling synthesis. Students then use these methods in algorithmic composition.

CETL 8000 Graduate Teaching Assistant Preparation. Substantially refined in Fall 2013. Included more on computing education research and learning theories, as well as teaching methods unique to computer science.

CS6461, Computing Education Research. Developed and approved Spring 2017. Theories of learning computing. Methods used in computing education research. Discussion of open research questions, such as teaching CS at the K-5 level, how to broaden participation in computing, and supporting non-traditional learners in CS, such as ESL learners and senior citizens.

VI. Service

A. Professional Contributions

A.1. Memberships and Activities in Professional Societies

- Member, Association for Computing Machinery, 1984–present
  - Member, ACM Special Interest Group Computer Science Education (SIGCSE), 1990–present
  - Member, ACM Special Interest Group on Computer-Human Interaction (SIGCHI), 1993–present
- Member, AERA Special Interest Group for Advanced Technologies for Learning, 1993–present
- Member, IEEE Computer Society, 1995-present
- Member, American Association for the Advancement of Science, 2009-present
- Member, International Learning Sciences Society, 2010-present

A.2. Journal Reviewing Activities

- **Associate Editor**, Journal of Computer Science Education Research, 2018–present.
- **Education Column Editor**, Viewpoints Section, Communications of the ACM, 2008–present.
- **Associate Editor**, ACM Transactions on Computing Education, 2010–present.
- **Member Editorial Board**, Journal of the Learning Sciences, 1998–present.
- **Member Editorial Board**, Journal of Interactive Learning Research, 1997-2002
- **Member Editorial Board**, IEEE Multimedia, 1998-2001
- **Member Editorial Board**, Interactive Learning Environments, 1993-2006
- **Member Editorial Board**, Journal of Human Computer Systems, 2006
- **Member Editorial Board**, Journal of Educational Resources in Computing, 2005-2008
- **Reviewer**, ACM Transactions on Software Engineering
- **Reviewer**, ACM Transactions on Computer-Human Interface (TOCHI)
- **Reviewer**, ACM Communications of the ACM
- **Reviewer**, Interactive Learning Environments
- **Reviewer**, Journal of Computers and Education
- **Reviewer**, Journal of the Learning Sciences
- **Reviewer**, Journal of User Modeling and User Interface Adaptation
- **Reviewer**, Cognitive Science
- **Reviewer**, International Journal of AI and Education
- **Reviewer**, American Philosophical Quarterly

- **Reviewer**, Journal of Communications Education
- **Reviewer**, Journal of Engineering Education
- **Reviewer**, Review of Educational Research
- **Reviewer**, Journal of Contemporary Psychology
- **Reviewer**, IEEE Transactions on Systems, Man, and Cybernetics
- **Reviewer**, Educational Researcher

A.3. Conference Committee Activities

- **Program Committee**, ACM ITICSE, Koli Calling, ACM Learning at Scale, 2019.
- **Program Committee**, ACM International Computing Education Research (ICER), ACM ITICSE, Koli Calling, ACM Learning at Scale, 2018.
- **Co-Chair**, Work in Progress Workshop, ACM ICER Conference, 2018–2019.
- **Co-Chair**, ACM SIGCSE Doctoral Consortium, 2015.
- **Co-Chair**, ACM SIGCSE Doctoral Consortium, 2014.
- **Program Committee**, ACM International Computing Education Research , Program Committee, 2008–2014
- **Chair**, Future of Computing Education Summit, June 24-25, 2009, Washington, DC. NSF-funded workshop.
- **Conference Co-Chair**, ACM SIGCSE'09 Symposium, held in Chattanooga, TN. 2009.
- **Program Co-Chair**, ACM SIGCSE'08 Symposium, held in Portland, OR. 2008.
- **Co-Organizer**, ACM SIGCSE International Computing Education Research Workshop, 2007, held in September at Georgia Institute of Technology, Atlanta, GA.
- **Co-Organizer**, ACM SIGCSE International Computing Education Research Workshop, 2006, held in September at the University of Kent, Canterbury, UK.
- **Co-Chair**, ACM SIGCSE Doctoral Consortium, March 2006
- **Co-Organizer**, ACM SIGCSE International Computing Education Research Workshop, 2005, held in September at University of Washington, Seattle.
- **Co-Chair**, ACM SIGCSE Doctoral Consortium, February 2005.
- **Program Committee**, Computer Supported Collaborative Learning Conference (CSCL), 2005.
- **Program Committee**, Computer Supported Collaborative Learning Conference (CSCL), 2002.
- **Program Committee**, International Conference of the Learning Sciences (ICLS), 2002.
- **Chair of NSF-sponsored Workshop** "Integrating Multimedia into CS Education" at Georgia TechÕs College of Computing, May 3–5, 2002.
- **Program Committee**, International Conference of the Learning Sciences (ICLS), 2000.
- **Program Committee**, Computer Supported Collaborative Learning Conference (CSCL), 1997.

- **Co-Organizer**, International Conference of the Learning Sciences (ICLS), 1998.
- **Co-Chair of NSF-Sponsored Workshop** with F. Weingarten. "Setting a Research Agenda for Computer Science in Educational Technology." 1998.
- **Chair of NSF-Sponsored Workshop** with J. Kolodner. "Design Education Workshop." 1996.
- **Co-Chair of Panel** with Y. Kafai, "Learner-Centered System Design: HCI Perspective for the Future." Designing Interactive Systems (DISÕ95). 1995.
- **Co-Chair of Symposium** with Y. Kafai, "Artifacts of Learning: Perspective on Students' Learning Processes and Strategies through their Learning Products." American Educational Research Association Annual Meeting 1995.
- **Co-Chair of Symposium**, "Exploring the dimensions of log file analysis: An interactive ÔCook-OffÕ." American Educational Research Association Annual Meeting 1995.
- **Chair**, American Educational Research Association (AERA), Special Interest Group for Advanced Technologies for Learning, 1995–1996
- **Program Committee**, International Conference of the Learning Sciences (ICLS), 1996.
- **Program Committee**, American Association of Artificial Intelligence (AAAIÕ96), 1996.
- **Reviewer**, American Educational Research Association Annual Meeting (AERA), 1995–2000
- **Program Committee**, Computer Supported Collaborative Learning Conference (CSCL), 1995.
- **Reviewer**, AI-Education Conference (AI-Ed'95)
- **Reviewer**, Cognitive Science Society Conference, 1994.

A.4. Other Reviewing Activities

- **Reviewer**, NSF AISL (2019).
- **Reviewer**, NSF DRK-12 (2018), Science of Learning Center, STEM+C.
- **Reviewer**, MIT Press
- **Reviewer**, Prentice-Hall
- **Reviewer**, Social Sciences and Humanities Research Council of Canada (SSHRC)

B. Public and Community Service

- **Chair**, Board of Regents Academic Advisory Committee for the Computing Disciplines, 2012–2015.
- **Member**, ACM Education Council, 2007–2017.
- **Member**, National Center for Women and IT (NCWIT) Leadership Team, 2011–2018.
- **Member**, Anita Borg Institute Advisory Board, 2010–2014.
- **Founding Administrative Director**, Partnership to Advance Computing Education (PACE), 2011–2013.
- **Chair**, Computing and Information Systems Advisory Committee, Chattahoochee Technical College, 2010–2014.
- **Vice-Chair**, ACM Education Board, October 2007–2012.

C. Institute Contributions

University of Michigan Committees

- Member, Diversity, Equity, and Inclusion Committee, 2018–2019.
- Member, Lecturer Search Committee, 2018–2019.

Georgia Tech Committees

- Member, Search Committee for Chair of the Division of Computing Instruction, 2017–2018.
- **Interim Associate Chair**, School of Interactive Computing, 2017.
- Member, Commission on Creating the Next in Education, 2015–present.
- **Chair**, Review, Promotion, & Tenure (RPT) for the School of Interactive Computing, 2014–2017.
- **PhD Area Chair**, Learning Sciences & Technologies, 2013–present.
- **Chair** and Georgia Tech representative to the Board of Regents Academic Advisory Committee on the Computing Disciplines, 2001–Present.
- **Director of Computational Media Program**, Chair of Undergraduate Curriculum Committee, 2011-2013
- Search Committee, Associate Provost for Distance Learning and Professional Education, Spring 2008
- Dean Review Committee, Spring 2008
- Search Committee, Director of CEISMC, Spring 2008
- Search Committee, Director of Assessment Office, Spring 2007
- BEES committee on the Undergraduate Learning Center, Fall 2005
- Physics *ad hoc* committee addressing rising WDF rates, Spring-Summer 2005
- Registrar Search Committee, 2005
- Undergraduate Curriculum Review Subcommittee, chair 2004-2005
- Technology Fee Committee, 2002-2003, chair 2003-2004
- College of Computing/College of Engineering Steering Committee 2002-2003, co-chair 2003-2004
- Full Professor Promotion Review Committee for School of Human Performance Systems, 2001.
- **Chair**, College of Computing Undergraduate Curriculum Committee, 2001-2003, 2005-2007
- Institute Review Committee, 2002-2007
- Institute Undergraduate Curriculum Committee, 2001-2007
- College of Computing, Undergraduate Semester Curriculum Task Force, 1998.
- College of Computing, PhD Admissions Committee, 1997-1998.

- Technology Fee Policy Committee, 1997.
- GVU HCI Traineeships Committee, 1994-1995 (founding chair), 1995-1996.
- Educational Technology Task Force, 1994-1996.
- College of Computing DeanÕs Advisory Committee, 1995-1996, 1997-1998.
- College of Computing Undergraduate Curriculum Committee, 1994-1995, 1995-1996, 2001-2003, 2004-2006 (Chair 2001-2003, 2005-2006)
- EduTech Technical Advisory Committee, 1993-1996.
- College of Computing Recruiting Committee, 1993–1994.

VII. Media Recognition

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[2] Joe Light and Rachel Emma Silverman. Generation jobless: Students pick easier majors despite less pay. *Wall Street Journal*, 2010.

[3] Daryl E. Chubin and Roosevelt Y. Johnson. Telling the stories of the BPC alliances: How one NSF program is changing the face of computing. Center for advancing science and engineering capacity, American Association for the Advancement of Science, 2010.

[4] Bo Leuf and Ward Cunningham. *The Wiki Way*. Addison Wesley, 2001.

[5] H. Coffee. The internet. *Georgia Tech Alumni Magazine*, 71(4):16–24, 1995.

[6] M. Hodges. Technology for education. *Research Horizons*, 11(4):8–15, 1994.

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[9] D.D. Thornburg. Disktop revolution: Is today's multimedia the soul of a new generation? *InCider/A+ Magazine*, pages 54–57, August 1993.

[10] L. Finkel. Q-and-A on multimedia. *Electronic Learning*, March:14, 1992.

[11] H. Brady. The 1992–93 technology and learning software awards. *Technology and Learning Magazine*, November/December(13–30), 1992.

VIII. Personal Data

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