

Andrea Pohoreckyj Danyluk
Mary A. and William Wirt Warren Professor of Computer Science, Emerita

Department of Computer Science
47 Lab Campus Drive
Williams College
Williamstown, MA 01267

email: adanyluk@williams.edu
Office: (413) 597-2178
FAX: (413) 597-4250

Education

Columbia University, Ph.D. in Computer Science, May 1992.
Dissertation: *Extraction and Use of Contextual Attributes for Theory Completion: An Integration of Explanation-Based and Similarity-Based Learning*.
Advisors: Kathleen McKeown and Michael Lebowitz

Columbia University, M.Phil. in Computer Science, June 1989.

Columbia University, M.S. in Computer Science, January 1986.

Vassar College, A.B. in Mathematics/Computer Science with Honors, May 1984.

Professional Experience

Northeastern University, Global Director of the Align Program and Visiting Professor (2018-2019).

Williams College, Mary A. and William Wirt Warren Professor of Computer Science (2018-2021), Dennis A. Meenan '54 Third Century Professor of Computer Science (2012-2018), Professor of Computer Science (2006-2012), Associate Professor of Computer Science (2001-2006), Assistant Professor of Computer Science (1993-2001), Department Chair (2005-2008).

Williams College Acting Dean of the Faculty (August 2009-March 2010), Associate Dean of the Faculty (April-June 2010).

Williams College, Cognitive Science Program Chair (2020-2021, 2005-2006).

New York University, Visiting Scholar (Fall 2015).

Bell Atlantic Science and Technology, White Plains, NY. Research Consultant, 1997-1998.

NYNEX Science and Technology, Inc., White Plains, NY. Member of Technical Staff, 1990-1994.

Columbia University, Department of Computer Science. Teaching Assistant and Research Fellow, 1984-1990.

Philips Laboratories, Briarcliff Manor, NY. Summer Member of Research Staff and Research Intern, 1988-1989.

GTE Laboratories, Waltham, MA. Summer Member of Technical Staff, 1987.

Teaching

Williams College

Courses Developed

CSCI 108 Artificial Intelligence: Image and Reality

CSCI 134 Introduction to Computer Science (in Java), with Kim Bruce and Tom Murtagh

CSCI 373 Artificial Intelligence

CSCI 374T Machine Learning
Courses Taught
CSCI 134 Introduction to Computer Science
CSCI 136 Data Structures and Advanced Programming
CSCI 361 Theory of Computation
CSCI 011 Introduction to Web Programming
CSCI 011 C, Unix, and the Joy of X
CSCI 014 Lego Robotics
COGS 222 Minds, Brains, and Intelligent Behavior
COGS 493 Cognitive Science Senior Seminar
Reading Course
John Coffey (Spring 1999) Knowledge Representations for Natural Language Processing

NYNEX Science and Technology, Inc.
Machine Learning Seminar (1990-1991)

Columbia University
Introduction to Computer Science with Pascal (Fall 1985)

Osher Lifelong Learning Institute
Two of six lectures for Frontiers of Science (Fall 2011)

Berkshire Institute for Lifetime Learning
Artificial Intelligence: Image and Reality (Spring 2007)

Research Machine Learning with an emphasis on applications; cost-sensitive learning; active learning; statistical relational learning; feature selection; theory revision; systematic data error and its effects on learning.

Research Supervised

Chan Woo Kim (2019-2020).
FrameSequenceGAN: Recurrent Animated Video Generation Using Generative Adversarial Networks and Sequence Discriminators.

Wei Luo (2017-2018).
Predicting Bow Controls and Audio Features for Expressive Music Generation.

Carl Rustad (2017-2018).
Multitasking Model-Agnostic Meta-Learning.

Wei Luo, Linda Zeng (Summer 2017).
Identifying Individual Salamanders Using Deep Learning and Nearest Neighbor Algorithms.

Melanie Subbiah (2016-2017).
Using Text Abstraction and LSTM Language Models for Domain-Independent Narrative Generation.

Derrick Bonafilia and Russell Kenneth Jones (Spring 2017).
GAN-Gogh: Creating Art with GANs.

Pamela Mishkin (2015-2016).
All the News That's fit to Troll? Algorithmic Moderation of the New York Times Comment Section.

Lauren Yu (2015-2016).
Predicting Expressive Bow Controls for Violin and Viola.

Reid Pryzant (Fall 2015).
Automating Metagenome Structural Feature Prediction.

Kai Wang (Summer 2015).
Unsupervised Salamander Matching With Stacked Denoising Autoencoders.

Kai Wang (Spring 2015).
Computational Music.

Rahul Nath (Fall 2014).
Learning Domain Models from Raw Action Sequences.

Lauren Yu (Clare Boothe Luce Research Scholar, Summer 2014).
A Hierarchical Approach for Classification in Applications with High Class Imbalance.

Matthew LaRose (Summer 2014).
Genetic Algorithm for Optimizing Object Recognition in Digital Images.

Gordon Finnie (Summers 2014 and 2015).
Machine Learning and Energy Disaggregation.

Joshua Geller (2013-2014)
Multi-class Feature Selection.

Daniel Seita (2013-2014)
Building Sum-Product Networks.

Kevin Chen, Joshua Geller (Summer 2013).
Identification of Individual Spotted Salamanders.

Daniel Seita (WSP 2013).
Classifier Learning in Domains with Highly Skewed Class Distributions.

Owen Barnett-Mulligan, Donny Huang, Alex Wheelock (Fall 2012-WSP 2013).
Distributed Robotics.

April Shen (2012-2013).
Prototype Support Vector Machines: Supervised Classification in Complex Datasets.

Chansoo Lee (2011-2012).
Active Learning with Feature Feedback for Object Identification.

Nicholas Arnosti (2010-2011).
Feature Selection via Probabilistic Outputs and Training of Linear Support Vector Machines.

Patricia Jacobs Klein (2010-2011).
Explaining the Testing Effect.
* Co-advisor with Nate Kornell

Heidy Khlaaf (Florida State University), Lucy Simko (Washington and Lee University), Emily Yu (Williams College) (Summer 2010 at Tufts University; with Prof. Carla Brodley).
Active Learning in Domains with Highly Skewed Class Distributions.

David Moore (2009-2010).
Transfer and Structure Learning in Markov Logic Networks.

Sara Carian, James (Robby) Finley, and William Jannen (Summer 2008).
Identification of Individual Spotted Salamanders.

Kyle Campbell (Fall 2007).
Models for Predicting Emotional States from Emotion-Antecedent Appraisal Dimensions.

David Moore (Summer 2007).
Computer Vision Algorithms for Identification of Spotted Salamanders.

Michael Gnozzio (2006-2007).
Constructive Induction of Neural Network Topology.

Alexandra Constantin (2006-2007, Spring 2006).
Brain Computer Interfaces.

Myron Minn-Thu-Aye (Summer 2006).
Identification of Spotted Salamanders.

Robin Stewart (2005-2006).
Automatic Identification of Off-Topic Regions of Conversation.

Neal Holtschulte (Fall 2005).
A Model of In-Group/Out-Group Bias.

Marina Lifshin (2004-2005).
Artificially Intelligent Animation Generation.

Alexandra Constantin (WSP 2005).
Applying Hidden Markov Models to Learn from Sequence Data.

Evan Sandhaus (2001-2002).
Developmental Ordering of Input Examples to Neural Networks.

Joshua Ain and Robert Gonzalez (Summer 2001).
Classification of Business News: an Investigation of Machine Learning Algorithms and their

Application to Unlabeled Textual Documents.
Alfonso Gonzalez del Riego (Fall 1999).
Integrating Time Series Prediction and Clustering to Classify Data According to Style.
Alfonso Gonzalez del Riego, Esteban Roman, Miles A. Munson (Summer 1999).
Empirical Evaluation of the Effects of Systematic Data Error on Inductive Learning Algorithms.
Alexander Eaton-Salners (Fall 1998).
Identification of Systematic Data Error via Conceptual Clustering.
Brendan Burns (1997-1998).
INDIGENT: Genetically Refining Expert Neural Networks.
Jeffrey Bolas (1996-1997).
PHIL-TOR: Natural Language Preprocessing in Document Filtering.
Kimberly Tabtiang (Summer 1995).
Preliminary study of the effects of systematic data error on inductive learning algorithms.

Previous Research Projects

Adaptive Expert Systems, NYNEX Science and Technology, Inc. (Project Leader) - Application of machine learning techniques to an expert system for diagnosing telephone local loop errors. Investigation of classification techniques, parameter tuning techniques, knowledge base modification techniques, noise, and data error.

Gemini, Columbia University (PhD thesis) - Integration of Analytical and Empirical Learning techniques.

RESEARCHER, Columbia University (member of research group) - Knowledge representation issues in the domain of explanation of physical devices.

COMET, Columbia University (member of research group) - Multimedia help systems, including expert systems and integration of text and graphical presentation.

Grants and Awards

EAGER: New and Returning Research Scholars: Introducing Research Career Pathways to Women through On-Site Mentoring at GHC, NSF EAGER Grant (CNS-1836703) PI with Erik Russell and Margaret Martonosi. \$299,402. (October 1, 2018-September 20, 2020)

Faculty Scholarship, Grace Hopper Celebration of Women in Computing Conference, Minneapolis, MN (October 2016, October 2013).

NSF supplement for a CRA-W GHC Research Scholars Program, BPC grant awarded to the Computing Research Association Committee on the Status of Women in Computing Research (CRA-W) With Nancy Amato, Texas A&M University. (2016 and 2017)

NSF REU supplement, BPC grant awarded to the Computing Research Association Committee on the Status of Women in Computing Research (CRA-W) With Prof. Carla Brodley, Tufts University. (Summer 2010)

Making Interaction Fundamental in Object-oriented CS1: Programming Tools and Curricular Materials to Support Concurrency and Event-driven Programming, NSF CCLI Grant (DUE-0088895) With Kim Bruce and Thomas Murtagh. \$287,892. (January 2001-December 2003)

Effects of Systematic Data Error on Inductive Machine Learning Algorithms, NSF POWRE Grant (EIA-9806218) \$74,352. (1998-2000)

NYNEX Science and Technology University Research Program, 1991, 1992, 1993, 1994. Applied for funding for University of Pittsburgh (1991, 1992), University of California, Irvine (1992, 1993, 1994), and University of Wisconsin, Madison (1994). Awarded funds are given to the universities to help carry out

research programs of value to NYNEX Science and Technology. They must be applied for by a NYNEX employee. Above awards are for research programs in Machine Learning in the amount of \$25,000 each.

Publications

Machine Learning

Edited Volumes

1. Brodley, Carla and Danyluk, Andrea (eds.) (2002) *Journal of Machine Learning Research*, Special Issue on the Eighteenth International Conference on Machine Learning (ICML-2001).
2. Brodley, Carla and Danyluk, Andrea (eds.) (2001) *Proceedings of the Eighteenth International Conference on Machine Learning*, Morgan Kaufmann.

Invited contributions to books

1. Danyluk, Andrea, Provost, Foster J. and Carr, Brian (2002) Telecommunications Network Diagnosis, in *Handbook of Data Mining and Knowledge Discovery*, Oxford University Press.
2. Danyluk, Andrea (1994) Gemini: An Integration of Analytical and Empirical Learning, in *Machine Learning: A Multistrategy Approach*, Morgan Kaufmann, pp. 189-215.

Refereed Journal and Conference Publications

1. Yu, Lauren and Danyluk, Andrea. (2017) Predicting Expressive Bow Controls for Violin and Viola, in Correia J., Ciesielski V., Liapis A. (eds) *Computational Intelligence in Music, Sound, Art, and Design* (EvoMUSART 2017). Lecture Notes in Computer Science, vol 10198. Springer. [Best Paper Nominee]
2. Arnosti, Nicholas A. and Danyluk, Andrea. (2012) Feature Selection via Probabilistic Outputs, in *Proceedings of the 29th International Conference on Machine Learning*, Omnipress.
3. Burns, Brendan D. and Danyluk, Andrea. (2000) Feature Selection vs Theory Reformulation: a Study of Genetic Refinement of Knowledge-based Neural Networks, *Machine Learning*, 38:1/2, pp. 89-108.
4. Provost, Foster. J. and Danyluk, Andrea (1999) Problem Definition, Data Cleaning, and Evaluation: A Classifier Learning Case Study, *Informatica*, 23, pp. 123-136.
5. Danyluk, Andrea, Fawcett, T., & Provost, F. (1999) Predicting the Future: AI Approaches to Time-Series Problems: a Workshop Report, *AI Magazine*, 20:1, p. 124.
6. Merz, C.J., Pazzani, M. and Danyluk, Andrea (1996) Tuning Numeric Parameters to Troubleshoot a Telephone-Network Loop, *IEEE Expert*, 11:1, pp. 44-49.
7. Danyluk, Andrea and Provost, Foster John (1993) Small Disjuncts in Action: Learning to Diagnose Errors in the Local Loop of the Telephone Network, in *Proceedings of the Tenth International Conference on Machine Learning*, Morgan Kaufmann, pp. 81-88.
8. Danyluk, Andrea (1989) Finding New Rules for Incomplete Theories: Explicit Biases for Induction with Contextual Information, in *Proceedings of the Sixth International Machine Learning Workshop*, Morgan Kaufmann, pp. 34-36.

9. Danyluk, Andrea (1987) The Use of Explanations for Similarity-Based Learning, in *Proceedings of the Tenth International Joint Conference on Artificial Intelligence*, Morgan Kaufmann, pp. 274-276.

Other Refereed Work

1. Shen, April and Danyluk, Andrea. (2013) Prototype Support Vector Machines: Supervised Classification in Complex Datasets. *Workshop on Solving Complex Machine Learning Problems with Ensemble Methods (COPEM 2013), held at ECML/PKDD 2013*.
2. Moore, David and Danyluk, Andrea. (2010) Deep Transfer as Structure Learning in Markov Logic Networks. *AAAI 2010 Workshop on Statistical Relational AI*.
3. Stewart, Robin, Danyluk, Andrea, and Liu, Yang. (2006) Off-Topic Detection in Conversational Telephone Speech, *Proceedings of the Workshop on Analyzing Conversations in Text and Speech*, at HLT-NAACL.
4. Danyluk, Andrea (1998) Position Paper, in Thearling, K. & Stein, R.M. (eds.) *Working Notes from the Workshop on Keys to the Commercial Success of Data Mining*, pp. 31-33.
5. Burns, Brendan D. and Danyluk, Andrea (1998) Theory refinement through knowledge-based feature set selection, in Esposito, F., Michalski R.S. & Saitta, L. (eds.) *Proceedings of the Fourth International Workshop on Multistrategy Learning*, pp. 53-63.
6. Provost, Foster J. and Danyluk, Andrea (1995) Learning from Bad Data, in Aha, D. W. & Riddle, P.J. (eds.) *Working Notes for Applying Machine Learning in Practice: A Workshop at the Twelfth International Machine Learning Conference* (Technical Report AIC-95-023). Washington, DC: Naval Research Laboratory, Navy Center for Applied Research in Artificial Intelligence, pp. 27-33.
7. Danyluk, Andrea (1995) A Comparison of Data Sources for Machine Learning in a Telephone Trouble Screening Expert System, in *Working Notes of the Workshop on Data Engineering for Inductive Learning: A Workshop at the International Joint Conference on Artificial Intelligence*, Montreal, Canada, pp. 1-10.
8. Danyluk, Andrea and Provost, Foster J. (1993) Adaptive Expert Systems: Applying Machine Learning to NYNEX MAX, in *Working Notes of the AAAI-93 Workshop on AI in Service and Support: Bridging the Gap Between Research and Applications*, Washington, DC, pp. 50-58.
9. Danyluk, Andrea (1991) Experiments in the Use of Explanatory Knowledge for Guiding Rule Induction, Unpublished proceedings of the Eighth International Machine Learning Workshop, Northwestern University, pp. 10-14.
10. Danyluk, Andrea (1990) The Use and Evaluation of Contextual Knowledge for Explanation Completion, in *Working Notes of the AAAI Symposium on Automated Abduction*, Stanford University, pp. 52-56. (Also available as University of California, Irvine Technical Report 90-32.)
11. Danyluk, Andrea (1988) Integrated Learning is a Two-Way Street, in *Working Notes of the AAAI Symposium on Explanation-Based Learning*, Stanford University, pp. 36-40.

Technical Reports

1. Danyluk, A., Fawcett, T., and Provost, F. (1998) *Predicting the Future: AI Approaches to Time-Series Problems*, Papers from the 1998 Workshop, AAAI Press Technical Report WS-98-07.

2. Danyluk, Andrea (1989) Recent Results in the Use of Context for Learning New Rules, Philips Laboratories Technical Report TR-89-066.
3. Danyluk, Andrea (1989) A Survey of Machine Learning Systems Integrating Explanation-Based and Similarity-Based Methods, Columbia University Department of Computer Science Technical Report CUCS-467-89.
4. Danyluk, Andrea (1989) Finding New Rules for Incomplete Theories: Induction with Explicit Biases in Varying Contexts, Columbia University Department of Computer Science Technical Report CUCS-466-89.
5. Danyluk, Andrea (1989) Rule Induction for Incomplete Domains: An Integration of Machine Learning Methods, Philips Laboratories Technical Report TN-89-049.
6. Baker, Michelle and Danyluk, Andrea (1986) Representing Physical Devices, Columbia University Department of Computer Science Technical Report.

Computer Science Education

Books

1. Bruce, Kim, Danyluk, Andrea, and Murtagh Thomas (2006) *Java: An Eventful Approach*, Prentice Hall.

Curricular Volumes

1. ACM/IEEE-CS Joint Task Force on Computing Curricula (2013) *Computer Science Curricula 2013*, ACM Press and IEEE Computer Society Press.

Refereed Journal and Conference Publications

1. Brodley, C., Barry, M., Connell, A., Gill, C., Gorton, I., Hescott, B., Lackaye, B., LuBien, C., Razzaq, L., Shesh, A., Williams, T., Danyluk, Andrea. (2020) An MS in CS for non-CS Majors: Moving to Increase Diversity of Thought and Demographics in CS in *Proceedings of the ACM SIGCSE Symposium*.
2. Baldwin, Douglas, Brady, Alyce, Danyluk, Andrea, Adams, Joel, and Lawrence, Andrea. (2010) Case Studies of Liberal Arts Computer Science Programs, in *ACM Transactions on Computing Education*, 10:1.
3. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2010) Introducing Concurrency in CS1, in *Proceedings of the ACM SIGCSE Symposium*, pp. 224-228.
4. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2005) Why Structural Recursion Should Be Taught before Arrays in CS1, in *Proceedings of the ACM SIGCSE Symposium*.
5. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2001) Event-driven Programming is Simple Enough for CS1, *the Sixth Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE)*, pp. 1-4.
6. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2001) A library to support a graphics-based object-first approach to CS1, in *Proceedings of the ACM SIGCSE Symposium*, pp. 6-10.

Other Refereed Work

1. Danyluk, Andrea and Buck, Scott. (2019) Artificial Intelligence Competencies for Data Science Undergraduate Curricula. *EAAI at AAAI 2019*.
2. Danyluk, Andrea. (2008) Artificial Intelligence for Non-Majors at Multiple Levels. *AAAI 2008 Spring Symposium on Using AI to Motivate Greater Participation in CS*.
3. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2004) Event-Driven Programming Facilitates Learning Standard Programming Concepts, *OOPSLA '04 Educators Symposium*.
4. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2004) Why Structural Recursion Should be Taught Before Arrays in CS1, *ECOOP '04 Eighth Workshop on Pedagogies and Tools for the Teaching and Learning of Object Oriented Concepts*.
5. Danyluk, Andrea. (2004) Using Robotics to Motivate Learning in an AI Course Aimed at Non-Majors, *AAAI 2004 Spring Symposium on Accessible Hands-on Artificial Intelligence and Robotics Education*.
6. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2001) Event-Driven Programming Facilitates Learning Standard Programming Concepts, *Fifth Workshop on Pedagogies and Tools for Assimilating Object Oriented Concepts, OOPSLA '01*.
7. Bruce, Kim, Danyluk, Andrea, and Murtagh, Thomas. (2000) A library to support a graphics-based object-first approach to CS1, *ECOOP '00 Workshop on Tools and Environments for Understanding Object-Oriented Concepts*.
8. Danyluk, Andrea (1994) Combining Introductory Computer Science and Artificial Intelligence, in *Working Notes of the AAAI Symposium on Improving the Instruction of Introductory Artificial Intelligence*, New Orleans, LA, pp. 73-74.

Newsletters, Outreach

1. Minding the Gaps in the CS Pipeline: The MSCS Degree, “Expanding the Pipeline” Column, Computing Research News (February 2021).
2. Fostering a Post-Graduate Tech Boom, a CRA Quadrennial Paper, <https://cra.org/wp-content/uploads/2020/11/Fostering-a-Post-graduate-Tech-Boom.pdf> (2020).
3. ACM Data Science Task Force Calls for Curricula Feedback and Example Courses, SIGCSE Bulletin, 52:2 (April 2020).
4. CRA-WP Research Mentoring at the 2019 Grace Hopper Celebration of Women in Computing: Going Strong and Growing, “Expanding the Pipeline” Column, Computing Research News (January 2020).
5. CRA-W Expands Research Mentoring at the 2018 Grace Hopper Celebration of Women in Computing, “Expanding the Pipeline” Column, Computing Research News (November 2018).
6. SIGCSE 2018 New Educators Workshop, SIGCSE Bulletin, 49:4 (October 2017).
7. CRA-W Continues Research Mentoring at the 2016 Grace Hopper Celebration of Women in Computing, “Expanding the Pipeline” Column, Computing Research News (January 2017).
8. SIGCSE 2016 New Educators Workshop, SIGCSE Bulletin, 47:4 (October 2015).
9. Broadening Participation in AI, “Expanding the Pipeline” Column, Computing Research News (November 2014).

10. New Educators Workshop at SIGCSE 2014, SIGCSE Bulletin (January 2014).
11. Happy 15th Birthday, CREU!, CRA-W Newsletter (Summer-Fall 2013).
12. Collaborative Research Experience for Undergraduates: the CREU program still going strong at 15, "Expanding the Pipeline" Column, Computing Research News (September 2013).
13. Collaborative Research Experience for Undergraduates, CRA-W Newsletter (Summer-Fall 2011).
14. Collaborative Research Experience for Undergraduates: the CREU program, "Expanding the Pipeline" Column, Computing Research News (January 2012).

Invited Presentations

Machine Learning/Artificial Intelligence Research

Machine Learning in the Arts, Sciences, and Social Sciences, Wellesley College (October 2018).

Machine Learning in the Arts, Sciences, and Social Sciences, Invited Research Keynote at MinneWIC 2017, the ACM-W Celebration of Women in Computing in the Upper Midwest, Minneapolis, MN (February 2017).

Identification of Individual Spotted Salamanders, Middlebury College (September 2011), Willamette University (March 2011), Union College (November 2010), Pomona College (September 2008).

Machine Learning meets the Real World: Successes and new research directions, Vassar College (February 2006).

Machine Learning meets the Real World: Successes and new research directions, an Invited Technical Talk at the Fourth Grace Hopper Celebration of Women in Computing, Vancouver (October 2002).

Characterizing the Effects of Systematic Data Error on Inductive Classifier Learning Algorithms, Purdue University and University of Massachusetts, Amherst (1999).

Machine Learning and NYNEX MAX: Small Disjuncts in Action, Siemens Corporate Research, Rutgers University, University of Wisconsin at Madison (1994).

Adaptive Expert Systems: Applying Machine Learning to NYNEX MAX, University of California at Irvine, New York University Business School (1992).

Finding New Rules for Incomplete Theories: Induction with Explicit Biases in Varying Contexts, Philips Laboratories (1989).

Rule Induction for Incomplete Domains: An Integration of Machine Learning Methods, Philips Laboratories (1988).

An Integrated Learning Method for Purpose-Directed Clustering, Bell Communications Research, Siemens Corporate Research (1988).

Computer Science Education

Computing Competencies for Undergraduate Data Science Programs: An ACM Task Force Final Report (with Paul Leidig, Andrew McGettrick, Lillian Cassel, Maureen Doyle, Christian Servin, Karl Schmitt, and Andreas Stefik) Special Session at SIGCSE 2021, Virtual Conference. (March 2021).

An Update on the ACM Data Science Taskforce (with Paul Leidig and Lillian Cassel), Special Session at SIGCSE 2020, Portland, OR (March 2020).

National Academies and ACM Data Science Projects (with Rebecca Nugent), Conference Board of the Mathematical Sciences, Alexandria, VA (May 2019).

ACM Task Force On Data Science Education: Draft Report and Opportunity for Feedback (organizer; with Lillian Cassel, Paul Leidig, and Christian Servin), Special Session at SIGCSE 2019, Minneapolis, MN (February 2019).

Building Bridges for Data Science Education (with Mine Cetinkaya-Rundel, organizer, Jeff Forbes, and Michael Posner), BoF at SIGCSE 2019, Minneapolis, MN (February 2019).

Building Bridges for Data Science Education (with Beth Chance, Chair, Mine Cetinkaya-Rundel, Jeff Forbes, and Michael Posner), Invited Panel at JSM 2019, Denver, CO (July/August 2019).

Computer Science Curriculum 2013, Computer Science Discipline Council Meeting, CUNY Graduate Center (April 2015).

Computer Science at Williams College: 1987-2014, Computer Science Symposium to kick off the development of a Computer Science Program at Whitman College (June 2014).

Experiences Mapping and Revising Curricula with CS2013, with Elizabeth K. Hawthorne, David Reed (moderator), Mehran Sahami, and Henry Walker, Panel at SIGCSE 2014, Atlanta, GA (March 2014).

ACM/IEEE Computer Science 2013 Exemplar-Fest (organizer; with Ruth Anderson, Christa Chewar, Elizabeth Hawthorne, Steve Roach, and Henry Walker), Special Session at SIGCSE 2013, Denver, CO (March 2013).

The Best Way: Research By Undergraduates, Panel at the Grace Hopper Celebration of Women in Computing Conference, Tucson, AZ (September 2009).

Tutorials vs Lectures or Seminars in the Sciences at Williams: Tradeoffs, Lawrence University Conference on Tutorial Education (March 31-April 1, 2007).

Other

So You're Full: Now What? (with Carla Brodley, Penny Rheingans; organized by Marie desJardins), Grace Hopper Celebration of Women in Computing Conference, Orlando, FL (October 2019).

How Universities are Creating New Pathways to Diversify Tech (moderator; with Valerie Barr, Carla Brodley, and Colleen Lewis), Grace Hopper Celebration of Women in Computing Conference, Orlando, FL (October 2019).

Building Your Professional Persona (with Ayanna Howard), Grace Hopper Celebration of Women in Computing Conference, Orlando, FL (October 2019).

Balancing Graduate School and Personal Life (with Rebecca Wright and Mondira Pant), CRA-W Graduate Cohort Workshop for Women, Chicago, IL (April 2019).

Publishing Your Research (with Margaret Martonosi), CRA-W Graduate Cohort Workshop for Women, Chicago, IL (April 2019).

Coping with Booming Class Enrollment (with Tracy Camp), Grace Hopper Celebration of Women in Computing Conference, Houston, TX (September 2018).

Can we really do it? Conducting Significant Computer Science Research in Primarily Undergraduate Institutions (PUIs), Birds-of-a-Feather Session at SIGCSE 2017, Seattle, WA (March 2017).

Research/Funding Strategies for Faculty (with Deb Agarwal), Grace Hopper Celebration of Women in Computing Conference, Houston, TX (October 2016).

Publishing Your Research (with Dilma DaSilva), CRA-W Graduate Cohort Workshop, San Diego, CA (April 2016).

Ex Machina: a discussion, Images Cinema, Williamstown, MA (May 2015).

Prof or Prez: Choosing your path (moderator; with panelists Fran Berman, Jan Cuny, Maria Klawe, and Mary Lou Soffa), Panel at the Grace Hopper Celebration of Women in Computing Conference, Phoenix, AZ (October 2014).

Undergraduate Research Internships, at the Student Opportunity Lab, Grace Hopper Celebration of Women in Computing Conference, Minneapolis, MN (October 2013).

Designing a Senior Faculty Career Mentoring Workshop: Let's Brainstorm (with Tracy Camp, Lori Pollock, Susan Rodger, and Mary Lou Soffa), Birds-of-a-Feather Session at the Grace Hopper Celebration of Women in Computing Conference, Minneapolis, MN (October 2013).

Time Management, CRA-W Mentoring Event for Women Faculty in Undergraduate Computing Programs, Denver, CO (March 2013).

Building Your Professional Network, Mentors, and Collaborations (with Nancy Amato and Evi Dube), CRA-W Cohort of Associate Professors Project, San Francisco, CA (November 2012).

Strategies to Help with Promotion to Full Professor (with Sue Fitzgerald and Ellen Walker), CRA-W Cohort of Associate Professors Project, San Francisco, CA (November 2012).

If I'd Only Known (organized by Marie desJardins and Jennifer Neville), Panel at the Grace Hopper Celebration of Women in Computing Conference, Baltimore, MD (October 2012).

Undergraduate Research Experience Internships (with Jamika Burge), CRA-W Undergraduate Mentoring Workshop at the Grace Hopper Celebration of Women in Computing Conference, Baltimore, MD (October 2012) and Portland, OR (November 2011).

Balancing Graduate School and Personal Life (with Tiffani Williams), CRA-W Graduate Cohort Workshop, Boston, MA (April 2011).

Academic Career Paths: Research and Teaching (with Lori Pollock), CRA-W Graduate Cohort Workshop, Boston, MA (April 2011).

Time Management, CRA-W Mentoring Event for Women Faculty in Undergraduate Computing Programs, Dallas, TX (March 2011).

For the love of teaching: Experiences of Undergraduate Liberal Arts College Faculty (organized by Tia Newhall), Panel at the Grace Hopper Celebration of Women in Computing Conference, Atlanta, GA (September 2010).

How do I start my own research program? (with Lise Getoor and Ashley Stroupe), CRA-W Career Mentoring Workshop (Early Career Researchers) at the Grace Hopper Celebration of Women in Computing Conference, Atlanta, GA (September 2010).

Leadership in its Various Manifestations (with Dona Crawford and Padma Raghavan), CRA-W Cohort of Associate Professors Project, Providence, RI (June 2010).

Getting Promoted to Full Professor (with Jodi Tims), CRA-W Cohort of Associate Professors Project, Providence, RI (June 2010).

Recruiting and Retaining at Primarily Undergraduate Institutions (organized by Jennifer Rosato), Panel at the Grace Hopper Celebration of Women in Computing Conference, Tucson, AZ (September 2009).

Work/Life Balance and Time Management (with Carla Schlatter Ellis), CRA-W Career Mentoring Workshop (Early Career Researchers) at the Grace Hopper Celebration of Women in Computing Conference, Tucson, AZ (September 2009).

The Graduate School Experience (with Eleni Stroulia and Ramya Raghavendra), CRA-W Career Mentoring Workshop (Undergraduates) at the Grace Hopper Celebration of Women in Computing Conference, Tucson, AZ (September 2009).

Time Management, CRA-W Mentoring Event for Women Faculty at Undergraduate Computer Science and Engineering Institutions, Chattanooga, TN (March 2009).

Taking Charge of Your Career (with Carol Shilepsky), CRA-W Cohort of Associate Professors Project event, Santa Fe, NM (November 2008).

Mining Data with Machine Learning, Lions Club of Adams, MA (January 18, 2007).

Now that machines can think... , Williams College Road Scholars, San Francisco, CA (March 2006).

Panelist, Careers in Computer Science, and Balancing Life and Career, an invited talk at a one-day program on Graduate School in Computer Science, University of Massachusetts (October 2005).

Machine Learning: Promises Broken and Fulfilled, Evalyn A. Clark Symposium on the Mathematical Sciences, Vassar College (1997).

Artificial Intelligence: Image and Reality, Williams Faculty Forum at the Williams Club, New York (1997).

At Williams College

Women in STEM, a panel organized by the Chemistry Student Advisory Committee (Claiming Williams Event, January 2017; Standalone Event, January 2016).

Identification of Individual Spotted Salamanders (with Josh Geller '15), Inside Williams (October and November 2013).

Feature Selection via Probabilistic Outputs, Science Lunch Talk (October 2013).

Computer Science Education (with Ben Goldberg and Henry Walker), Panel at the 25th Anniversary Symposium of Computer Science at Williams (April 2013).

Invited faculty address, Celebration of Olmsted Awards for Faculty Development to local schools (May 2012).

Support Vector Machines, in STAT 442 Computational Statistics and Data Mining (May 2012).

Identification of Individual Spotted Salamanders: an Update, Science Lunch Talk (April 2011).

Interdisciplinary Gallery Talk: Models of the Mind (with Joe Cruz and Safa Zaki), WCMA (February 2010).

Identification of Individual Spotted Salamanders, Staff Lunch Talk (September 2009), Science Lunch Talk (April 2008).

Off-Topic Detection in Conversational Telephone Speech, Science Lunch Talk (April 2006).

The Place of Technology in the Life of the Mind, Board of Trustees Retreat (Jan. 2006).

Mining Data with Machine Learning, Staff Lunch Talk (Sept. 2002).

The Role of Machine Learning in Data Mining, Summer Science Lunch Talk (July 2002).

Spring Family Weekend, Distinguished Lecturer, Robots: State of the Art and Challenges for the Future (2000).

Sigma Xi Faculty Lectures, Part I. Machine Learning: Background and Recent History, Part II. Data Mining and Other Applications of Machine Learning: Current Research (1999).

An Overview of Artificial Intelligence (and its relationship to Neuroscience), in NSCI 201 Introduction to Neuroscience (1996).

Adaptive Expert Systems, Bronfman Lunch Talk (1995).

Tutorials

Bruce, Kim, Danyluk, Andrea, and Murtagh, Tom. (2004) Java, an Eventful Approach, a Tutorial given at *the Consortium for Computing in Small Colleges, Ninth Annual Northeastern Conference (CCSCNE)*.

Bruce, Kim, Danyluk, Andrea, and Murtagh, Tom. (2001) Events and Objects First: An innovative approach to teaching Java in CS1, a Tutorial given at *the Consortium for Computing in Small Colleges, Sixth Annual Northeastern Conference (CCSCNE)*.

Conferences and Workshops Organized

Research Conferences and Workshops

ICML-2009, the Twenty Sixth International Conference on Machine Learning, Montreal, Canada. General Chair.

ICML-2001, the Eighteenth International Conference on Machine Learning, Williams College, Williamstown, MA. Co-chair: Prof. Carla Brodley, Purdue University.

Predicting the Future: AI Approaches to Time-Series Problems, sponsored jointly by AAAI-98 (the National Conference on AI) and the International Machine Learning Conference, with Tom Fawcett and Foster Provost (1998).

Curricular Workshops

New Educators Workshop

A pre-conference workshop held at SIGCSE 2018, co-organized with Zachary Dodds (February 2018).

New Educators Workshop

A pre-conference workshop held at SIGCSE 2016, co-organized with Dave Reed (March 2016).

Small or Liberal Arts Colleges Adapting to CS2013: Making It Work

Held at SIGCSE 2015, with Michael Jipping, Rhys Price Jones, David Reed, Brad Richards, and Richard Wicentowski (March 2015).

New Educators Workshop

A pre-conference workshop held at SIGCSE 2014, co-organized with Dave Reed (March 2014).

Making the Most of Undergraduate Research

held at SIGCSE 2013, with Nancy Amato, Ran Libeskind-Hadas, Lori Pollock, and Susan Rodger (March 2013).

held at SIGCSE 2011, with Margaret Martonosi, Kathryn McKinley, Lori Pollock, and Susan Rodger (March 2011).

Java: an Eventful Approach, held at SIGCSE 2006, with Kim Bruce (March 2006).

Java: an Eventful Approach, at SIGCSE 2004, with Kim Bruce and Tom Murtagh (March 2004).

One-week workshop at Williams College on an innovative approach to teaching Java in CS1, with Kim Bruce and Tom Murtagh (July 2002).

Events and Objects First: An innovative approach to teaching Java in CS 1, held at SIGCSE 2002, with Kim Bruce and Tom Murtagh (March 2002).

Two-day workshop at Williams College on an innovative approach to teaching Java in CS1, with Kim Bruce and Tom Murtagh (August 2001).

Outreach Workshops

CRA-W-sponsored programs on graduate school at the Grace Hopper Celebration of Women in Computing Conference (2019, 2018, 2017, 2016, 2015, 2014).

CRA-W/CDC Broadening Participation in AI mentoring program, held at AAAI-14, Quebec City, Quebec, Canada (July 2014).

Current Professional Activities and Affiliations

Co-Chair of The Computing Research Association Committee on Widening Participation in Computing (CRA-WP, previously CRA-W), 2019-present.

Member of The Computing Research Association Committee on the Status of Women in Computing Research (CRA-W), 2008-2019. Special Projects: Mentoring Sessions, Research Scholars, and Returning Scholars at GHC, 2013-2019; Strategic Assessment and Redesign Subcommittee, 2019; Steering Committee, 2014-2018; Collaborative Research Experience for Undergraduates in Computer Science and Engineering (CREU), 2008-2016.

Member of the Computing Research Association (CRA) Board of Directors, 2019-present.
Committees of the Board: Strategic Planning Steering Group, A. Nico Habermann Award Committee

Member of the Advisory Council, Center for Inclusive Computing, 2019-2021.

Co-Chair of the ACM Data Science Task Force, 2017-2021 (See committee work and draft curricular volumes at <http://dstf.acm.org>.)

Member of the ACM (Association for Computing Machinery) Education Advisory Committee (previously the ACM Education Council), 2015-2020.

Member of the ACM Education Board, 2018-2020.

Member of LACS (The Liberal Arts Computer Science Consortium), 2006-2021.

Member of the Advisory Group. International Data Science in Schools Project (IDSSP), 2018-2019.

Member of Google Online Education Advisory Council, 2015-2018.

Member of Sigma Xi, ACM, IEEE, and the Association for the Advancement of Artificial Intelligence.

Other Professional Activities and Service

Member of the Steering Committee, ACM/IEEE Computer Science Curriculum 2013.

Member of Advisory Board, Machine Learning Experiences in Artificial Intelligence: A Multi-Institutional Project, NSF DUE 0716338.

ECML PKDD 2018 Journal Track
Guest Editor

International Conference on Machine Learning and affiliated workshops
Member of Advisory Board (2002, 2003, 2004, 2012).
Program Committee (2000, 2004, 2005, 2006, 2008, 2012, 2015, 2016).
Program Committee, Workshop on Data Mining Lessons Learned (2002).
Program Committee, Workshop on Integrated Learning in Real World Domains (1992).

The National Conference on Artificial Intelligence (AAAI) and affiliated workshops and symposia
Reviewer, EAAI-19 Model AI Assignments
Program Committee, EAAI-11, the Second Symposium on Educational Advances in Artificial Intelligence (2011).
Program Committee, AAAI Workshop on AI Education (2008).
Tutorial Forum Co-Chair (2007 and 2008).
Program Committee (2006).
Reviewer, Eighth SIGART/AAAI Doctoral Consortium (2003).
Panelist, the Seventh SIGART/AAAI Doctoral Consortium (2002).
Associate Chairperson (1991).

The IEEE International Conference on Data Mining (ICDM)
Program Committee (2001).

The Florida Artificial Intelligence Research Symposium (FLAIRS)
Program Committee, Special Track on AI Education (2004, 2005, 2006, 2011, 2012).
Program Committee (2001).

The ACM Technical Symposium on Computer Science Education (SIGCSE)
Reviewer (2008, 2009, 2011, 2012).
Panels and Special Sessions Chair (2007) and Co-Chair (2009).

The Grace Hopper Celebration of Women in Computing
Poster Program Co-Chair, ACM Student Research Competition Co-Chair (2015).
Poster Committee (2014, 2016, 2017).
Birds of a Feather Committee (2008).

Judge, ACM Student Research Competition (2009, 2011, 2013, 2014, 2016).
Scholarship Program Reviewer (2007, 2010, 2013, 2014).
Mentor, New Investigator Session and Ph.D. Forum (2010).

5th IEEE International Conference on Tools with Artificial Intelligence
Program Committee (1993).

IEEE/ACM Computer Science Curriculum 2001
Intelligent Systems Focus Group (1999 - 2000).

Reviewer for the CRA/CCC Computing Innovation Fellows program, National Science Foundation,
Machine Learning Journal, Journal of Machine Learning Research, Journal of AI Research, Journal of Data
Mining and Knowledge Discovery, IEEE Transactions on Systems, Man and Cybernetics,
Neurocomputing, ACM Transactions on Computing Education, ACM Inroads, ACM ITiCSE Working
Group Papers, Wiley, and Morgan Kaufmann.

External Reviewer, Harvey Mudd College (2018), Vassar College (2016), Gustavus Adolphus College
(2015), Amherst College Department of Computer Science (2013), Wellesley College Department of
Computer Science (2012), University of San Francisco Department of Computer Science (April 2008).

Comprehensive Program Reviewer, FIPSE – Fund for the Improvement of Postsecondary Education
(2003).

Tenure/Promotion reviews: Sienna College, Davidson College, Swarthmore College, Creighton University,
St. Lawrence University, Oregon State University, Pomona College, The College of New Jersey, SUNY
Potsdam, Vassar College, Drew University, Denison University, Adelphi University.

Committees and Service at Williams College

Curricular Planning Committee (2017-2018).
Task Force on Faculty Planning (2013-2014).
Co-PI, Clare Boothe Luce Research Scholars Program (2012-).
Marshal for Trustees and Recipients of Honorary Degrees (2017, 2016, 2015, 2014, 2013, 2012).
Marshal for Delegates (2018).
Committee on Appointments and Promotions (2020-2021, 2012-2015, 2007-2010).
Chair, Committee on Priorities and Resources (2011-2012).
Ad Hoc Committee on the Tenure Appeal Process (2010-11).
Presidential Search Committee (2009).
Coordinating Committee for the College's Self-Study (2006-2007).
Chair, Faculty Steering Committee (July-December 2006).
Faculty Steering Committee (2005-2007).
Cognitive Science Program Advisory Committee (2003-present).
CTAH/FCMT Advisory Committee (2004-2008).
Chair, Committee on Educational Policy (2001-2002).
Committee on Educational Policy (2000-2001).
Phi Beta Kappa, Secretary/Treasurer (2011-2012, 2010-2011, 2000-2001).
Faculty Review Panel (2006-2007, 1999-2001).
Division III and Psychology Research Funding Committee (2016-2017, 2014-2015, 2013-2014, 2010-2012,
2000-2001).
Science Executive Committee (2005-2008, 1998-1999).
CenterSeries Programming Committee, 62 Center for Theatre and Dance (2013-2015, 2010-2011)
Honor and Discipline Committee (1999-2000, 1996-1997), Discipline Committee (2004-2005, 1995-1996).
Calendar and Schedule Committee (2016-2017).
College Task Force on Computers and the Curriculum (1996-1997).
Herchel Smith and Donovan-Moody Fellowship Selection Committee (2010, 2008).
Flynt Graduate Fellowship Selection Committee (2008).

Horace F. Clark Fellowship Selection Committee (2008).
Goldwater Fellowship Nominating Committee (1998).
Watson Fellowship Nominating Committee (1995).
Faculty Mentor (2016-2018).
First Year Student Advisor (2020-2021, 2016-2018, 2010-2015, 2005-2008, 2003-2004, 1998-2001, 1995-1997).

Department Service

Co-organizer (with Duane Bailey), The 25th Anniversary Symposium of Computer Science at Williams (April 19-21, 2013).
Computer Science Department Colloquium Coordinator (1995, 1996, 1998-99, 1999-2000, Spring 2004, Fall 2004, Fall 2013).
Computer Science Department Co-Administrator for Discrete Math Proficiency Exam (2020-2021, 2017-2018).
TA coordinator (Spring 1995, Spring 1997, 2001-2002).

Honors and Awards

Nelson Bushnell '20 Prize (2021)
ACM Distinguished Member for outstanding educational contributions to computing (2019)
Computing Research Association Committee on the Status of Women in Computing Research (CRA-W) Distinguished Professor, 2010 Cohort of Associate Professors Project.
CRA-W Distinguished Professor, 2008 Cohort of Associate Professors Project.
Computer Science Graduate Research Fellowship, Columbia University, 1984-1990.
Phi Beta Kappa, Vassar College, 1984.
Vassar Fellowship, Vassar College, 1984.
Gertrude Smith and Mary Evelyn Wells Award for Excellence in Mathematics, Vassar College, 1984.

Fundraising Activities

Bowdoin College Senior Parents Gift Campaign (2013-2014).
Bowdoin College Parents Executive Committee (2012-2013, 2011-2012).
Vassar College Class of 1984, Class Agent (2014, 2016-present).