Cinda Heeren

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**Education\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 2004.

Thesis: Optimization Problems in Data Mining. Advisor: L. Pitt.

# MS, Operations Research, Stanford University, 1990

BS, Mathematical and Computational Sciences, Stanford University, 1990

**Current Position\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Teaching Professor*, Computer Science, University of Illinois, 2016-present

Taught Discrete Mathematical Structures (6 semesters), Data Structures and Programming Principles (15 semesters), and Introduction to Programming for Non-Majors (2 semesters). Enrollment in current data structures course: 800. Typical course rating: 4.7/5.0. Developed new courses entitled “Visualizing Literature”—a joyful combination of NLP, Data Viz, and Literature (Sp14), and “Data Driven Discovery”—a practical experience for non-majors (Sp15).

**Past Positions\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Senior Lecturer*, Computer Science, University of Illinois, 2012-2016.

*Lecturer*, Computer Science, University of Illinois, 2007-2012.

*Visiting Lecturer*, Computer Science, University of Illinois, 2004-2007.

*Director of Diversity Programs*, Computer Science, University of Illinois, Spring 2004-Fall 2005. Developed outreach programs and processes, many of which are institutionalized within our Women in Computer Science organization.

*Graduate Research Assistant*, Computer Science, University of Illinois, 1997-2003.

*Teaching Associate*, Statistics, University of California, Santa Barbara, Spring 1993.

Taught Stochastic Processes.

*Lecturer*, Computer Science, Statistics, and Mathematics, California Polytechnic State University at San Luis Obispo, 1990-1993. Taught Automata Theory, Numerical Methods, Discrete Math, Introductory Statistics, and Calculus I.

**Scientific Interests\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Education, data mining, machine learning, computational geometry, data visualization.

**Awards\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Teacher of the Year, Illinois-Indiana Section of the American Society of Engineering Education, June, 2015.

Incomplete List of Teachers Ranked as Excellent by Their Students, University of Illinois at Urbana-Champaign, 10 consecutive semesters, Spring, 2011 through Fall, 2016 (did not teach in Spring, 2015 or 2016).

Distinguished Alumni Educator Award, Department of Computer Science, University of Illinois at Urbana-Champaign, October, 2014.

Teaching Academy Fellow, Academy for Excellence in Engineering Education, College of Engineering, University of Illinois at Urbana-Champaign, 2014-2015.

Rose Award for Teaching Excellence, College of Engineering, University of Illinois at Urbana-Champaign, February, 2014.

**Invited Talks, Instruction, and Video\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Invited Speaker,* “Special Snowflakes-A Riff on Innovation” IEEE Pulse Student Conference, University of Illinois, February, 2017.

*Invited Speaker,* “A Teacher’s Voice,” Illinois-Indiana Section of the American Society of Engineering Education annual meeting, Western Illinois University, April, 2016.

*Invited Speaker,* “Celebrating Ada,” Champaign-Urbana Women in Technology, University of Illinois Research Park, October, 2015.

*Invited Speaker,* “CS: Who Wouldn’t Love It?” NCWIT Central Illinois Aspirations in Computing Award Ceremony, University of Illinois, April, 2015.

*Invited Speaker,* CS@Illinois Recruiting and Retention, Workforce Diversity Summit, Mountain View Chamber of Commerce, Mountain View, CA, February, 2015.

*Video Contributor*, Illinois Emerging Technology Report, University of Illinois at Urbana-Champaign, January, 2015.

*Video Contributor*, Teaching Wirelessly with Tablets, University of Illinois at Urbana-Champaign, January, 2015. https://blogs.cites.illinois.edu/cites-ats/2015/01/27/teaching-wirelessly-with-tablets/

*Invited Speaker,* Active Learning, College of Business Teaching Academy, University of Illinois at Urbana-Champaign, October, 2014.

*Video Panelist*, Video Vignettes, Innovations, and Conversations, Annual Faculty Retreat, University of Illinois at Urbana-Champaign, February, 2014.

*Selected Attendee*, National Academy of Engineering, Frontiers of Engineering Education Symposium, Irvine, CA, October, 2013.

*Video Contributor*, Best Practices and Advice for Teaching Large-enrollment Classes: Engaging Students and Keeping Their Attention, Mark Micale’s Distinguished Teacher Scholar Project, University of Illinois at Urbana-Champaign, February, 2012.

*Panelist*, Academic Integrity: Values and Vision for a Modern University, Ethics Awareness week, University of Illinois at Urbana-Champaign, October, 2012.

*Instructor*, Pan-American Advanced Studies Institute on Methods in Computational Discovery for Multidimensional Problem Solving; Universidad del Valle, Guatemala, July, 2013 (NSF OISE – 1242216; PI: Marshall Scott Poole).

*Curriculum presenter*, UIUC/ROENovice Teacher Support Program, 2004.

**Student Engagement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Faculty Advisor*, Association for Computing Machinery (ACM) student organization, 2010-present.

*Faculty Advisor*, Women in Computer Science (WCS) student organization, 2004-present.

*Facilitator*, ACM Outreach Committee – ACM students teach programming to at-risk high school students enrolled in Tap-In Academy, an after school enrichment program, 2012.

**Extra-Curricular Leadership\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Organizer*, Pebble Smartwatch Education Program for CS@Illinois. Secured donation of 2000 watches to the CS Department community, and arranged student education and celebration events, Spring, 2014.

*Judge,* HackIllinois student-run hack-a-thon, wherein 1000 students develop and submit small projects to be evaluated. April, 2014 and February, 2015.

*Director*, Girls Engaged in Math and Science – middle school summer day camp run by CS@Illinois, 2013-present.

*Advisor and occasional speaker*, Girls Engaged in Math and Science – middle school summer day camp run by the National Center for Supercomputing Applications, 2005-2012.

*Workshop* *Participant*, The Prairie Project: Infusing Sustainability Across the Illinois Curriculum, May, 2011.

*Co-Organizer*, Birds of a Feather: Discrete Math, SIGCSE, 2010.

*Judge*, Regional Aspirations in Computing Award, NCWIT, 2010.

*Director/Host*, UIUC Regional Celebration of Women in Computing, 2005.

*Director*, Building Communities, an NSF supported recruiting and retention project, 2004-2005.

*Organizer*, Grace Hopper Celebration of Women in Computing, panel discussion. *Undergraduate Recruiting and Retention, the UIUC ChicTech Project*, 2004.

**Educational Technology Design\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*The Workbook* a web application that makes data exploration accessible to novice programmers. Key Features: students can easily add their own Python analysis modules and d3 data visualization.

*Monad* a software testing framework designed specifically for evaluating student code submissions. Key features: incremental compilation and meaningful student feedback.

*Romdo* a command-line grade maintenance tool that replaces the horrible campus Blackboard system. Key features: easy interface with auto graders, api allows for flexible access, fast.

*Chara* a web based open lab queuing system that allows students to take a number when requesting assistance. Key features: used to collect data on student access patterns and quality of teaching interactions.

*CoMoTo* the Collaboration Monitoring Toolkit, a wrapper for MOSS that also pulls student data from university resources. Key features: maintains complete history of student submissions, data visualization helps detect inappropriate collaboration.

*ProMoTo* a web based student performance visualization tool that sits on top of *Romdo*. Key features: gives secure access to current grades, allows students to speculate on future performance and set goals, helps instructor diagnose and identify at risk students.

**Advising\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Laura Licari, BS. *Computer Security in MineCraft*, 2016.

Oliver Melvin, BS. *Crowd-sourced Transcription Alignment*, 2016.

John Espinosa, BS (co-advisor). *Reminiscence in Social Media*, 2015.

Tom Bogue, BS. *Procedural Generation of Push Block Puzzles*, 2015.

Matthew Dierker, BS. *Interactive Display of Student Homes*, 2015.

Matthew Joras, BS. *Analysis of Autograding Systems*, 2015.

Harsh Singh, BS. *Automatic Readability*, 2015.

Suharsh Sivakumar, BS. *BindiBot: a question-answering forum robot*, 2014.

Brendan Ryan, BS. *Visualizing the NYTimes Wedding Announcements*, 2014.

Chase Geigle, BS. *An Analysis of Inappropriate Collaboration in CS2*, 2013.

Jon Tedesco, MS (co-advisor). *Influence in Heterogeneous Information Networks*, 2013.

Ciara Proctor, BS. *Computing as a Tool of Inquiry for Middle School Students*, 2013.

Charlie Meyer, MS (co-advisor). *CoMoTo: The Collaboration Modeling Toolkit*, 2012.

Jack Toole, BS. *Monad: An Educational Testing Framework*, 2012.

**Committee Memberships\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Engineering IT Governance, Education Working Group, College of Engineering, 2016-present

Outreach Committee, Department of Computer Science, 2015-present

Governance Committee, Department of Computer Science, 2015-2017

Teaching Advancement Board, University of Illinois, 2014-2017

Undergraduate Computing Education Committee, College of Engineering, 2014

Scaling Committee, Department of Computer Science, 2013-2014

Student Awards Committee, Department of Computer Science, 2012-present

Teaching Evaluation and Improvement, Department of Computer Science, 2012-2013

Undergraduate Curriculum Reform, Department of Computer Science, 2011-2013

**Grants\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*AWARE: Accelerating Women and underRepresented Entrepreneurs*, NSF, Advisory Board (PIs: Taylor, Bleill, Singer, Frerichs), 2015-2016, $100,000.

*EI: Learning Trajectories for Integrating K-6 Computer Science and Mathematics*, NSF Stem+C, co-PI (co-PIs: Isaacs, Israel, Reese), 2015-2018.

*Scaling cultures of collaboration: Evidence-based reform in portal STEM courses*, NSF DUE, Widening Implementation & Demonstration of Evidence-based Reforms, Sr. personnel (PIs: Mestre, Greene, Herman, Tomkin, West), 2014-2017, $2,000,000.

*Teaching Computing at Scale,* UIUC College of Engineering, Strategic Instructional Improvement Program, co-PI (co-PI: Zilles, Pitt, Fleck, Angrave), 2011-2014, $450,000.

*Visual Parallelism for Data Structures,* NSF/IEEE-TCPP Curriculum Initiative on Parallel and Distributed Computing, PI, 2012, $3000.

*Tablet PCs for Monitoring Large Engineering Classes*, UIUC Grants for the Advancement of Teaching Engineering, co-PI (co-PI: Kamin), 2010, $20,000.

*CoMoTo, a Collaboration Monitoring Tool*, UIUC Grants for the Advancement of Teaching Engineering, co-PI (co-PI: Shaffer), 2010, $20,000.

*Evaluating Pedagogy*, UIUC Grants for the Advancement of Teaching Engineering, co-PI (co-PI: Zilles), 2008, $25,000.

*Multimodal Information Access and Synthesis*, A DHS Center of Excellence, Sr. personnel (PI: Roth), 2006-2009, $2,000,000.

*An Immersive Introduction to Computer Science*, UIUC Grants for the Advancement of Teaching Engineering, co-PI (co-PI: Pitt), 2007, $25,000.

*Concept Inventories for Computer Science*, NSF CCLI, co-PI (co-PI: Zilles, Goldman, Loui, Kaczmarczyk), 2006-2009, $600,000.

*Building Diversity in Computer Science*, NSF DUE, Sr. personnel (PI: Kamin), 2004-2009, $1,000,000.

*Tablet PC Award*, Hewlett Packard, Sr. Personnel (PI: Kamin), 2004, $87,500.

*Learning Communities in Discrete Mathematics*, UIUC Provost’s Initiative for Teaching Advancement, PI, 2004, $6750.

**Media\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Computer Science Through the Lens of Art, Games, and Fashion*, Smile Politely, http://www.smilepolitely.com/tech/computer\_science\_through\_the\_lens\_of\_arts\_games\_and\_fashion/, April 28, 2015.

*Parisa Tabriz: Security Princess, Hacker, Role Model*, The Daily Illini, http://www.dailyillini.com/article/2015/03/parisa-tabriz-security-princess-hacker-role-model, March 2, 2015.

*Hacking Her Way In: Computer Science No Longer Just a Man’s World*, The News-Gazette, http://www.news-gazette.com/news/local/2014-09-21/hacking-her-way-computer-science-no-longer-just-mans-world.html, September 21, 2014.

*Computers Now and Then*, The Daily Illini, http://www.dailyillini.com/article/2014/09/computers-now-and-then, September 9, 2014.

*Camp at UI Aims to Get Girls Focused on Computing*, The News-Gazette, http://www.news-gazette.com/news/local/2014-06-28/camp-ui-aims-get-girls-focused-computing.html, June 28, 2014.

*Pebble Smart Watch Allows Students Hands-Free Communication*, The Daily Illini, http://www.dailyillini.com/article/2014/05/pebble-smart-watch-allows-students-hands-free-communication, May 6, 2014.

*Guest Lecturer to Reveal Intersection of Science, Creativity, Communication*, The Daily Illini, http://www.dailyillini.com/article/2014/04/guest-lecturer-to-reveal-intersection-of-science-creativity-communication, April 9, 2014.

*Camp Takes Students Beyond Computer Science*, The News-Gazette, http://www.news-gazette.com/news/local/2013-06-27/camp-takes-students-beyond-computer-science.html, June 27, 2013.

*The Story of Jobs Resonates Even After His Passing*, The Daily Illini, http://www.dailyillini.com/article/2011/10/the-story-of-jobs-resonates-even-after-his-passing?mode=jqm, October 10, 2011.

*Gender Bias Not as Strong in Today’s Job Market*, The Daily Illini, http://www.dailyillini.com/article/2005/09/gender-bias-not-as-strong-in-todays-job-market?mode=jqm, September 13, 2005.

*ChicTech Hopes More Women Jump into Tech*, The Daily Illini, http://www.dailyillini.com/article/2004/12/chictech-hopes-more-women-jump-into-tech, December 6, 2004.

**Publications\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Quantitative Correlation between Student Use of Office Hours and Course Performance (with W. Fagen). *122nd American Society for Engineering Education Annual Conference & Exposition (ASEE 2015).*
2. Reengineering an “Introduction to Computing” course within a College-Wide Community of Practice (with W. Fagen). *122nd American Society for Engineering Education Annual Conference & Exposition (ASEE 2015).*
3. Enabling Students through a Modern, Computing-Centric Education (with W. Fagen). *Illinois Learning Sciences Design Laboratory Symposium,* poster *(ILSDL 2015).*
4. Quantitative Correlation between Student Use of Office Hours and Course Performance (with W. Fagen). *Illinois Learning Sciences Design Laboratory Symposium,* poster *(ILSDL 2015).*
5. Computerized Testing: A Vision and Initial Experiences (with C. Zilles, M. West, W. Fagen, and R. Deloatch). *Illinois Learning Sciences Design Laboratory Symposium,* poster *(ILSDL 2015).*
6. Visualizing Parallelism in CS2 (with C. Massung). *Proceedings of the 27th IEEE International Parallel and Distributed Processing Symposium* *(IPDPS 2013).*
7. CoMoTo: the collaboration modeling toolkit (with C. Meyer, E, Shaffer, and J. Tedesco). *2011 ACM Conference on Innovation and Technology in Computer Science Education* *(ITiCSE 2011).*
8. Setting the Scope of Concept Inventories for Introductory Computing Subjects (with K. Goldman, P. Gross, G. Herman, L. Kaczmarczyk, M. Loui, and C. Zilles). *Transactions in Computing Education.* 10, 2, Article 5 (June 2010), 29 pages.
9. Identifying important and difficult concepts in introductory computing courses using a Delphi process (with K. Goldman, P. Gross, G. Herman, L. Kaczmarczyk, M. Loui, and C. Zilles), *2008 Special Interest Group on Computer Science Education (SIGCSE 2008)*.
10. Working group report on concept inventories in discrete mathematics (with V. Almstrum, P. Henderson, V. Harvey, W. Marion, C. Riedesel, L. Soh, and A. Tew). *2006 ACM Conference on Innovation and Technology in Computer Science Education* *(ITiCSE 2006).*
11. Maximal boasting (with L. Pitt). *2005 ACM International Conference on Knowledge Discovery in Data Mining (KDD2005)*.
12. Optimized disjunctive association rules via sampling (with J. Elble and L. Pitt). *2003 IEEE International Conference on Data Mining (ICDM03)*.
13. Optimal indexing using near-minimal space (with H.V. Jagadish and L. Pitt). *2003 ACM Symposium on Principles of Database Systems (PODS03)*.