

# Chris Mayfield

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## Education

Ph.D., Computer Science, Purdue University, Aug 2011

M.S., Computer Science, Purdue University, May 2007

B.S., Computer Science, University of Utah, May 2005

B.A., German Language, University of Utah, May 2005

## Experience

**James Madison University**, Harrisonburg VA, 2011–Present

Professor 2023–Present, Associate Professor 2017–2023, Assistant Professor 2011–2017.

**Purdue University**, West Lafayette IN, 2005–2011

Graduate Fellow, Research Assistant, Teaching Assistant.

**Google Inc.**, Mountain View CA, Summer 2009

Performed a large-scale study of hard disk failure trends across all of Google's production servers; validated results in Pinheiro et al., FAST 2007.

**IBM Almaden Research Center**, San Jose CA, Summer 2008

Using DB2 pureXML, developed algorithms and experimental components for *Data-Driven Analysis of XML Data for Business Intelligence* (DAXBI).

**The Arbiter .net**, Sandy UT, 10/2001–12/2003 and 1/2005–7/2005

Led the development of an extensive ASP.NET web application for sports associations to assign referees to games and manage payroll. Over 100,000 users in 2005; the NCAA acquired the company in 2008.

**L-3 Communication Systems**, Salt Lake City UT, 1/2004–12/2004

Designed and implemented embedded networking software, device drivers, and test applications for the FAB-T system using C++ and the Green Hills Integrity Real-time OS.

## Honors and Awards

POGIL Early Achievement (PEACH) Award, The POGIL Project, 2019

Oliver Endowed Professorship, JMU College of Integrated Science and Engineering, 2017–2019

Outstanding Junior Faculty Award, JMU College of Integrated Science and Engineering, 2016

Santos Innovation Award, JMU Center for Faculty Innovation, 2014

Outstanding Service Award, Purdue Computer Science Department, 2009

GAANN Fellowship, Purdue Computer Science Department, 2007

Siemens Leadership Scholarship, Purdue Computer Science Department, 2007

Upsilon Pi Epsilon Honor Society, Purdue Computer Science Department, 2007

## Publications

1. **Analysis of Student Grades Before and After Adopting POGIL.**  
C. Mayfield, S. Raleigh, H. Hu, C. Kussmaul. ITiCSE 2023.
2. **Introducing the Focus & Action of Students & Teachers Observation Protocol (FASTOP).**  
C. Kussmaul, P. Campbell, M. Torres-Demas, C. Mayfield, H. Hu. ASEE 2023.
3. **Teamwork in CS1: Student Learning and Experience with POGIL.**  
H. Hu, A. Yadav, D. Gavin, C. Kussmaul, C. Mayfield. SIGCSE 2023.
4. **Toward a New State-level Framework for Sharing Computer Science Content.**  
B. Edmison, S. Edwards, L. Babb, C. Mayfield, N. Swayne, Y. Jung, M. Honts, M. Ellis. SIGCSE 2023.
5. **A Five Stage Faculty Development Program to Transform Introductory Courses in Computer Science: The IntroCS POGIL Project.**  
C. Kussmaul, H. Hu, C. Mayfield, and P. Campbell.  
*Handbook of STEM Faculty Development.* Information Age Publishing: Charlotte, NC. 2023.
6. **POGIL in CS1: Evidence for Student Learning and Belonging.**  
C. Mayfield, S. Moudgalya, A. Yadav, C. Kussmaul, H. Hu. SIGCSE 2022.
7. **Professional Development and Support for POGIL in Computer Science.**  
C. Kussmaul, H. Hu, P. Campbell, C. Mayfield, A. Yadav. SIGCSE 2022.
8. **Fourth Hour: A CS1 Review Session Led by Teaching Assistants Using Peer Instruction.**  
M. Gilbert, D. Weikle, C. Mayfield, C. Johnson. *Journal of Computing Sciences in Colleges*, 36:6, 2021.
9. **Measuring Students' Sense of Belonging in Introductory CS Courses.**  
S. Moudgalya, C. Mayfield, A. Yadav, H. Hu, C. Kussmaul. SIGCSE 2021.
10. **Collaborative Learning, Self-Efficacy, and Student Performance in CS1 POGIL.**  
A. Yadav, C. Mayfield, S. Moudgalya, C. Kussmaul, H. Hu. SIGCSE 2021.
11. **Introduction to Python | Conditions and Logic—Python | Introduction to Java | Boolean Logic—Java.**  
C. Mayfield, T. Shepherd, H. Hu. *ACM EngageCSEdu*, Dec 2019.
12. **Think Java: How to Think Like a Computer Scientist, 2nd Edition.**  
A. Downey, C. Mayfield. O'Reilly Media, 326 pages, Dec 2019. (1st Edition: 252 pages, May 2016.).
13. **POGIL in Computer Science: Faculty Motivation and Challenges.**  
A. Yadav, C. Kussmaul, C. Mayfield, H. Hu. SIGCSE 2019.
14. **Adopting CS Principles in a Breadth-First Survey Course.**  
C. Mayfield. *Journal of Computing Sciences in Colleges*, 32:5, 2017.
15. **Evaluating an Alternative CS1 for Students with Prior Programming Experience.**  
M. Kirkpatrick, C. Mayfield. SIGCSE 2017.
16. **Results from a Survey of Faculty Adoption of POGIL in Computer Science.**  
H. Hu, C. Kussmaul, B. Knaeble, C. Mayfield, A. Yadav. ITiCSE 2016.
17. **Computational Thinking in Elementary and Secondary Teacher Education.**  
A. Yadav, C. Mayfield, N. Zhou, S. Hambrusch, T. Korb. *ACM Trans. on Computing Education*, 14:1, 2014.
18. **Introducing Undergraduate Database Students to K-12 Education Research.**  
C. Mayfield, C. Ottenheimer, B. Canada, B. Bell. SIGCSE 2014.
19. **Learning Relational Algebra by Snapping Blocks.**  
J. Gorman, S. Gsell, C. Mayfield. SIGCSE 2014.

20. **Introducing Computational Thinking in Education Courses.**  
A. Yadav, N. Zhou, C. Mayfield, S. Hambrusch, T. Korb. SIGCSE 2011.
21. **ERACER: A Database Approach for Statistical Inference and Data Cleaning.**  
C. Mayfield, J. Neville, S. Prabhakar. SIGMOD 2010.
22. **Analysis of Regulatory Protease Sequences Identified Through Bioinformatic Data Mining of the Schistosoma Mansoni Genome.**  
D. Bos, C. Mayfield, D. Minchella. *BMC Genomics Journal*, 10:488, 2009.
23. **Database Support for Probabilistic Attributes and Tuples.**  
S. Singh, C. Mayfield, R. Shah, S. Prabhakar, S. Hambrusch, J. Neville, R. Cheng. ICDE 2008.
24. **Query Selectivity Estimation for Uncertain Data.**  
S. Singh, C. Mayfield, R. Shah, S. Prabhakar, S. Hambrusch. SSDBM 2008.
25. **Indexing Uncertain Categorical Data.**  
S. Singh, C. Mayfield, S. Prabhakar, R. Shah, S. Hambrusch. ICDE 2007.

## Grants and Funding

1. **Equipping for Praxis: Advancing Computer Science Teachers through Endorsement.**  
P. Shank, C. Mayfield, T. Cole, S. Hodges. NSF CSforAll: \$999,968. 2022-2025.
2. **Exploring the Impact of POGIL on Student Engagement and Concept Understanding.**  
H. Hu, P. Campbell, C. Mayfield. NSF IUSE: \$299,985. 2022–2024.
3. **IntroCS-POGIL: Process Oriented Guided Inquiry Learning in Introductory Computer Science.**  
H. Hu, C. Kussmaul, C. Mayfield, A. Yadav. NSF IUSE: \$1,984,936. 2017–2021.
4. **JMU CS 101 Dual Enrollment Program (high school teacher professional development).**  
4-VA Collaborative: \$56,108. 2013–2016.
5. **Apps4VA Student Project Competition (for undergraduate database systems course).**  
Center for Innovative Technology and Virginia Department of Education: \$6,180. 2013–2015.
6. **Computer Science Teaching Academy (summer workshop for high school teachers).**  
Google CS4HS: \$12,000. 2013.

## Workshops and Tutorials

1. **Facilitator’s Toolbox for Encouraging Interactive, Collaborative Classrooms.**  
C. Mayfield, T. Pirmann. CSTA Session: Virtual Event, Jul 2020.
2. **Guiding Students to Discover CS Concepts and Develop Process Skills Using POGIL.**  
M. Posch, D. Duke, C. Mayfield. SIGCSE Workshop: Portland, OR, Mar 2020.
3. **Process Skills in Computer Science.**  
H. Hu, C. Mayfield, C. Kussmaul. SIGCSE Special Session: Minneapolis, MN, Feb 2019.
4. **Guiding Students to Discover CS Concepts and Develop Process Skills Using POGIL.**  
C. Mayfield, D. Duke, M. Posch. SIGCSE Workshop: Minneapolis, MN, Feb 2019.
5. **Northeast POGIL Regional 3-Day Workshop.**  
S. Gravelle, J. Brown, B. Mancini, T. Murray, C. Mayfield, S. O’Brien, K. Drury, G. Webster, S. Hunnicutt, M. Reeves. Johns Hopkins University: Baltimore, MD, July 2017.
6. **Guiding Students to Discover Fundamental Concepts and Develop Process Skills.**  
C. Mayfield, R. Waller. AMIA Informatics Educators Forum: New Orleans, LA, Jun 2018.

7. **Guiding Students to Discover CS Concepts and Develop Process Skills Using POGIL.**  
H. Hu, C. Kussmaul, C. Mayfield. SIGCSE Workshop: Baltimore, MD, Feb 2018.
8. **Guiding Students to Understand CS Concepts and Develop Process Skills Using POGIL.**  
C. Mayfield. CCSC Central Plains Workshop: Lincoln, NE, Mar 2017.
9. **Converting Your Teaching (or Even Your Whole Department!) to Active Learning via POGIL.**  
H. Hu, C. Mayfield, J. Pearce. SIGCSE Special Session: Seattle, WA, Mar 2017.
10. **Guiding Students to Discover CS Concepts and Develop Process Skills Using POGIL.**  
C. Kussmaul, C. Mayfield, H. Hu. SIGCSE Workshop: Seattle, WA, Mar 2017.
11. **POGIL in CS: Small Steps and Giant Leaps.**  
C. Kussmaul, H. Hu, C. Mayfield. SIGCSE Pre-Conference Event: Seattle, WA, Mar 2017.
12. **Helping Students to Construct Content Knowledge and Develop Process Skills with POGIL.**  
C. Mayfield, T. Pirmann. WeTeach\_CS Summit: Austin, TX, Jun 2016.
13. **Helping Students to Develop Communication, Teamwork, and Other Process Skills with POGIL.**  
C. Kussmaul, H. Hu, T. Pirmann, C. Mayfield. SIGCSE Special Session: Memphis, TN, Mar 2016.
14. **Guiding Students to Discover CS Concepts and Develop Process Skills Using POGIL.**  
C. Kussmaul, H. Hu, C. Mayfield. SIGCSE Workshop: Memphis, TN, Mar 2016.

## Panels and Presentations

1. **Analysis of Student Grades After Switching to POGIL.**  
C. Mayfield, S. Raleigh, H. Hu. SIGCSE Poster: Toronto, Canada, Mar 2023.
2. **TextbooksForAll: Free Textbooks and Their Place in Computer Science Education.**  
S. Matthews, C. Mayfield, R. Arpaci-Dusseau, K. Webb. SIGCSE Panel: Virtual Event, Mar 2021.
3. **EngageCSEdu: A Collection of Engaging Assignments.**  
B. Morrison, M. Craig, M. Gondree, R. Vivian, C. Mayfield, H. Hu, C. Arnold, A. Kurdia, T. Chen.  
SIGCSE Sister Session: Virtual Event, Mar 2021.
4. **Implementing CS Principles as a Breadth-First Survey Course.**  
C. Mayfield. SIGCSE Poster: Seattle, WA, Mar 2017.
5. **Apps4VA at JMU: Student Projects Featuring VLDS Data.**  
C. Mayfield. VLDS Insights Conference: Stafford, VA, Jun 2015.
6. **Guided Inquiry Learning in Context: Perspectives on POGIL in CS.**  
H. Hu, M. Lang, C. Kussmaul, C. Mayfield, T. Pirmann. SIGCSE Panel: Atlanta, GA, Mar 2014.
7. **Blown to Bits Jeopardy and Introduction to POGIL.**  
C. Mayfield. CS4EDU Workshop: West Lafayette, IN, Jul 2012.
8. **Computational Thinking in K-12 Education.**  
C. Mayfield. Tapestry Workshop: Charlottesville, VA, Jun 2012.
9. **Contemporary Issues and Computational Thinking in K-12 Education.**  
C. Mayfield. CS4HS Workshop: West Lafayette, IN, Jul 2011.
10. **The Orion Uncertain Data Management System.**  
S. Singh, C. Mayfield, S. Mittal, S. Prabhakar, S. Hambrusch, R. Shah.  
COMAD Demo: Bombay, India, Dec 2008.
11. **Orion 2.0: Native Support for Uncertain Data.**  
S. Singh, C. Mayfield, S. Mittal, S. Prabhakar, S. Hambrusch, R. Shah.  
SIGMOD Demo: Vancouver, Canada, Jun 2008.