

Curriculum Vita  
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*Version 2016.09*

Computer Science  
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## Education

*Ph.D. in Computer Science and Cognitive Science*, Indiana University, Bloomington,  
December 1997

*B.A. in Computer Science*, Indiana University, Bloomington, May 1988

*B.A. in Anthropology*, Indiana University, Bloomington, May 1987

## Research Areas

Much of my research and activities can be classified into one of the following three, broad, overlapping categories:

1. **Education** – Gender issues, computer science curriculum development, emergent pedagogy, effective classroom technologies, open standards in educational software and materials, inclusive teaching, working across interdisciplinary boundaries
2. **Robotics** – Developmental robotics, humanoid robotics, inexpensive personal robots for education and research, robotics programming interfaces
3. **Emergent Intelligence** – emergence in natural and artificial systems, on-line machine learning, cognitive science, artificial neural networks, learning high-level cognitive abilities, such as analogy-making

## Employment

1. **Chair**, Department of Computer Science, Bryn Mawr College (July 2007–June 2010, July 2011–June 2012). Formed the Department of Computer Science during this time.
2. **Director**, Institute for Personal Robots in Education, Bryn Mawr College (January 2008–present). Developed Institute with Georgia Tech. and Microsoft Research.
3. **Associate Professor**, Computer Science, Bryn Mawr College (2006–present).
4. **Assistant Professor**, Computer Science, Bryn Mawr College (2001–2006).
5. **Assistant Professor**, Department of Computer Science and Computer Engineering, University of Arkansas, Fayetteville (1998–2001).



## Software Projects

1. Calysto (2012–present): educational tools for Jupyter notebooks, including languages, libraries, and pedagogical support. Portions funded by the Gates Foundation, and the Helmsley Charitable Trust. [github.com/Calysto](http://github.com/Calysto)
2. Calico (2006–2012): a cross-platform editor, shell, and languages for teaching computer science. Individual libraries can be used directly by many languages. Funded by Microsoft Research and NSF. [wiki.roboteducation.org/Calico](http://wiki.roboteducation.org/Calico)
3. Myro (2006–2012): a library for easily use robots and media for introductory computing. Funded by Microsoft Research and NSF. [bitbucket.org/ipyre/calico](http://bitbucket.org/ipyre/calico)
4. Pyro (2001–present): an advanced set of tools for exploring sophisticated robots and control algorithms. Funded by NSF. Winner of the Premier Award for Excellence in Engineering Educational Courseware. [svn.cs.brynmawr.edu/pyrobot/](http://svn.cs.brynmawr.edu/pyrobot/)

## Publications

### Books, Book Chapters, Edited Proceedings, and Special Issues

1. special issue editor, with Meeden, L.A. *Connection Science*. Special issue on “Developmental Robotics.” (2006) Connection Science.
2. proceedings editor, with Meeden, L.A. “Developmental Robotics” Symposium Notes of the 2005 AAAI Spring Symposium. (2005) AAAI Press.
3. proceedings editor, *Proceedings of the 2000 Midwest Artificial Intelligence and Cognitive Science Society Conference*. 2000, AAAI Press.
4. book chapter, with Berghel, H. “The World Wide Web.” In M. Zelkowitz (ed.), *Advances in Computing*, v. 48, Academic Press, pp. 178-218, 1999.
5. book chapter, with Meeden, L.A., and Marshall, J.: “Exploring the Symbolic/Subsymbolic Continuum: A case study of RAAM.” In *The Symbolic and Connectionist Paradigms: Closing the Gap*, Hillsdale, N.J. L. Erlbaum Associates, 1992.

### Magazine articles and columns

1. “Robots make computer science personal.” (2006) Communications of the ACM, Viewpoint. Volume 49. Pages 25 - 27. ACM Press. New York, NY, USA.
2. with D. Kumar, L. Meeden, and H. Yanco: “The Pyro toolkit for AI and robotics.” in *AI Magazine*.
3. with L. Meeden: “Developmental Robotics Spring Symposium.” in *AI Magazine*.
4. “AI Update.” A news/opinion column in *intelligence magazine*, the journal of ACM's Special Interest Group on Artificial Intelligence (SIGART). Spring 2000, Summer 2000, Fall 2000, Winter 2000, Spring 2001, Summer 2001, Fall 2001, and Winter 2001.



4. with Jennifer S. Kay, James B. Marshall, Keith O'Hara, and Mark Russo. (2012). "Calico: A Multi-Programming-Language, Multi-Context Framework Designed for Computer Science Education". Published in SIGCSE '12, March, 2012, Ralleigh, NC USA.
5. Mark Guzdial, David Ranum, Brad Miller, Beth Simon, Barbara Ericson, Samuel A. Rebelsky, Janet Davis, Kumar Deepak, and Doug Blank. 2010. Variations on a theme: role of media in motivating computing education. In Proceedings of the 41st ACM technical symposium on Computer science education (SIGCSE '10). ACM, New York, NY, USA, 66-67.
6. with Ananya Misra, and Deepak Kumar. "A Music Context for Teaching Introductory Computing." (2009) Published in ITiCSE '09, July 6 - 9, Paris, France.
7. with Jay Summet, Deepak Kumar, Keith O'Hara, Daniel Walker, Lijun Ni, and Tucker Balch. (2009) "Personalizing CS1 with Robots." Published in SIGCSE '09, March 4-7, 2009, Chattanooga, TN USA.
8. with Dianna Xu, Douglas Blank, and Deepak Kumar. (2008) "Games, Robots, and Robot Games: Complementary Contexts for Introductory Computing Education". Game Development and Computer Science Education (GDCSE'08). Cozumel, Mexico.
9. with Keith J. O'Hara, D. Stewart W. Tansley, Teyvonnia Thomas, and Meena Seralathan. (2008) "Humanoids in the Classroom." The 5th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI 2008).
10. with J. Marshall, and student J. Lewis. (2005) "The Multiple roles of anticipation in Developmental Robotics" in *From Reactive to Anticipatory Cognitive Embodied Systems: AAI 2005 Fall Symposium Notes*. AAI Press, 2005.
11. with J. Marshall, and L. Meeden. (2005) "An Emergent Framework for Self-Motivation in Developmental Robotics." in *Developmental Robotics: AAI 2005 Spring Symposium Working Notes*. AAI Press, 2005.
12. with J. Marshall, and L. Meeden. (2004) "An Emergent Framework for Self-Motivation in Developmental Robotics." In *Proceedings of the International Conference on Development and Learning (ICDL)*. IEEE Computer Society, 2004.
13. with L. Meeden, and J. Marshall: "Self-Motivated, Task-Independent Reinforcement Learning for Robots." In *Proceedings of Real Life Reinforcement Learning (RLRL)*, a workshop at the AAI 2004 Fall Symposium Series. AAI Press, 2004.
14. with H. Yanco, D. Kumar, and L. Meeden: "The Karel-the-Robot Paradox: A framework for making sophisticated robotics accessible." Proceedings of the *Accessible Hands-on Artificial Intelligence and Robotics Education*, a workshop in the AAI 2004 Spring Symposium Series. AAI Press, 2004.
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6. with L. Meeden. (1998) "Robot competitions as class projects," in SIGART Bulletin, Volume 9, Number 2.
7. with students Hudson, J.H., Mashburn, B.C., and Roberts, E.A. (1999) "The XRCL Project: The University of Arkansas' Entry into the AAI 1999 Mobile Robot Competition." Technical Report CSCE-1999-01.
8. with Holmes, G., and students Wells, R., and Wolinski, P. (1998) "Interactive Gradebook: The Missing (Hyper)Link." Technical Report CSCE-1999-02, 1999.

### Keynotes, Invited Talks, and Tutorials

1. JupyterDay (2016). New York, NY. Invited presentation on educational material developed for Jupyter notebooks.
2. TechGirlz (December 12, 2015). Tutorial for girls at Baldwin School using Calysto Processing.
3. "Beyond Myro" (2011). IPRE Tutorial Workshop. Georgia Institute of Technology. Atlanta, GA USA.
4. Invited CSTA Panel discussion, July 2011, Wellesley College.
5. invited presentation at the Teaching Workshop for Engineering and CS Faculty, Union College, December 4, 2005.
6. with Yanco, H.: **AAAI Tutorial Program**. Tutorial given at AAAI-05. July 2005. Fifty participants. Pittsburgh, PA.
7. keynote talk **Growing the Seeds of Cognition: Midwest AI and Cognitive Science Conference**, April 2005. Dayton, OH.
8. invited talk **Beyond LEGOs: Bard College**, July 2002. Introduction to advanced robotics for high-achieving high school students in the Hudson Valley region.  
On-line at <http://emergent.brynmawr.edu/~dblank/bard/>.
9. **Patterns of Curriculum Design: Villanova University**, Nov. 4, 2002, with Deepak Kumar.

### Grants, stipends, and other funding

1. **TIDES: Teaching to Increase Diversity and Equity in STEM**, to Bryn Mawr College, 2013–present. Funded through the American Association of Colleges and Universities (AAC&U) by a grant from the Leona M. and Harry B. Helmsley Charitable Trust. Bryn Mawr College was awarded \$170,000 to fund an effort to build computational modules for the physical sciences for use in major's curriculum, beginning with Physics and to be extended to Biology, Chemistry, and Geology via examples and applications.
2. **Blended Learning**, from the Gates Foundation, to Bryn Mawr College. 2011–2012.
3. from NSF, for the Center for the Science of Information, CCF-0939370.
4. from NSF, PIRE #0730206: **Partnership for International Research and education. "Universally Accessible Infrastructures to Advance Capabilities"**. With Drexel, Virginia Tech, UPenn, Swarthmore, Bryn Mawr College, and the Korea Advanced Institute of Science and Technology (KASIT). \$2.5M over 5 years.



5. from NSF, IPRE. DUE-0920539, "Personal Robots for CS1: Next Steps for an Engaging Pedagogical Framework." \$250k over three years.
6. for Institute for Personal Robots in Education (IPRE). Awarded from Microsoft Research, 2006–2009.
7. NSF CCLI-Educational Materials Development, Division of Undergraduate Education, Proposal #0231363 (University of Massachusetts Lowell, Bryn Mawr College, Swarthmore College, and Stanford University), *Beyond LEGOs: Hardware, Software and Curriculum for the Next Generation Robot Laboratory*. Co-PI. \$400,194 to begin January 2003, over three years.
8. *Developmental Robotics*, Mellon Tri-Co Fellow, with Lisa Meeden and Deepak Kumar. \$4,000, 2002–2003.
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- **Presentation: Analyzing Representations in Sequential Recursive Auto-Associative Memory (RAAM), First Annual Midwest ConnectFest, Bloomington, IN, November, 1990.**
- **1990-1991 President, Indiana University Computer Science Graduate Student Association.**
- **1989-1990 Indiana University Graduate Student Organization Departmental Representative, Computer Science Graduate Student Association.**
- **1987-1989 President, Indiana University Association of Computing Machinery, local chapter.**