# Peter Mawhorter

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## Education

**University of California Santa Cruz**, Ph.D. Computer Science, *March 2016.*
**Harvey Mudd College**, B.Sc. Computer Science, *May 2008.*

## Research

**Postdoctoral Scholar** Massachusetts Institute of Technology, *Cambridge, MA.*
Professor Harrell, *Summer 2017–present*
> I'm working with Dr. Harrell on a project funded through the Qatar Computing Research Institute, which is aimed at discovering region-specific design principles for virtual identity systems (e.g., Facebook profiles or in-game avatars) and testing those principles through the development and deployment of prototype apps within the region. As part of this project I have applied deep learning techniques to sort avatar images according to novelty and to identify region-specific appearance trends (submission under review). Continuing work focuses on AI-enabled large-scale data analysis in order to understand human motivations as well as qualitative research such as in-depth interviews to confirm motivations and preferences inferred from the data.

**Researcher** University of California Santa Cruz, *Santa Cruz, CA.*
Professors Mateas, Wardrip-Fruin, and Jhala, *Fall 2009–Spring 2016*
> Worked with Ben Weber on a *Starcraft* AI written in the reactive planning language ABL. Built a level generator for *Infinite Mario* using an occupancy-based algorithm. Worked with Brandon Tearse to create *Skald*, a rational reconstruction of the *Minstrel* story generation system. Worked on brainstorming and prototyping for a climate science education game with a team of students, faculty, and external advisors. Collaborated closely with many faculty on these projects, including Michael Mateas, Noah Wardrip-Fruin, and Arnav Jhala. My thesis project was *Dunyazad*, a system that generates narrative choices according to a theory of choice poetics.

**Research Assistant** Harvey Mudd College, *Claremont, CA.*
Professor Dodds, *Summer 2008*
> Implemented FastSLAM on inexpensive robot platforms using single-camera vision.

**Researcher** Harvey Mudd College, *Claremont, CA.*
Professor Stone, *Fall 2007–Spring 2008*
> Worked with RealNetworks through the Harvey Mudd College clinic program to design a distributed streaming algorithm.

**Research Assistant** Harvey Mudd College, *Claremont, CA.*
Professor Erlinger, *Summer 2007*
> Deployed a wireless sensor network for collecting microclimate temperature data.

## Teaching

**Visiting Professor** Pomona College, *Claremont, CA.*
*Computer Science Department*, Professor Chen, *Fall 2016–Spring 2017*
> I was a visiting professor in the Computer Science department at Pomona College. I taught CSCI 151 Artificial Intelligence and co-taught CSCI 062 Data Structures in the fall semester, and then CSCI 030 Computation and Cognition and CSCI 062 Data Structures in the spring semester.

**Teaching Assistant** University of California Santa Cruz, *Santa Cruz, CA.*
*COSMOS Program*, Christopher Maraffi, *Summer 2014*
  I was the teaching assistant for an intensive 4-week summer course as part of the COSMOS program. Exceptional high-school students learned game design and programming fundamentals, completing two projects over the course and learning about GameMaker, Processing, Blender, and Unity. I helped students with their projects and gave a few lectures on game design concepts.

**Teaching Assistant** University of California Santa Cruz, *Santa Cruz, CA.*
*CMPS 80K: Foundations of Interactive Game Design*, Professor Mateas, *Spring 2014*
  A large general education class introducing game design concepts. Students used GameMaker to learn game design fundamentals and made games as their final projects. As part of a team of TAs and graders, I taught GameMaker in two weekly sections, while the lectures covered design topics. Most of the grading was done by undergraduate graders; I directly managed four graders and also helped maintain the master grade spreadsheet for the entire class.

*CMPS 160: Introduction to Computer Graphics*, Professor Davis, *Fall 2013*
  A core upper-division computer science class covering the basics of computer graphics. Students completed several well-structured graphics projects as well as a mid-term and a final. Professor Davis let me help extensively with homework and test design, and I also taught lab sections and helped students during office hours.

*CMPS 179: Game Design Practicum*, Professor Swanson, *Spring 2013*
  A small elective class on interactive data visualization. Students learned Javascript and WebGL, and created websites that visualized data from eBay using both 2D and 3D techniques. I helped manage assignment submissions and grading, as well as giving students detailed feedback on their final projects.

*I was given my department's 2011-2012 outstanding TA of the year award.*

*CMPS 172: Game Design Studio III*, Professor Whitehead, *Spring 2012*
  The final quarter of the game design major's senior capstone class. Along with another TA, I held weekly progress report meetings with several teams working to complete their game projects, giving detailed feedback and helping teams manage their schedules. Helped resolve internal disputes and ensure that team members were each doing their fair share of the work.

*CMPS 146: Game AI*, Professor Mateas, *Spring 2014*
  A large upper-division elective in which students learned about game AI techniques such as search and behavior trees. I helped design assignments and managed submissions and grading, and covered lecture when Professor Mateas was travelling.

**Teaching Assistant** Harvey Mudd College, *Claremont, CA.*
*CS 124: User Interface Design*, , Professor Alvarado, *Spring 2009*
  Worked as a grader/tutor for a course on user interface design, giving students detailed feedback on written assignments and helping them with UI design projects.

**Teaching Assistant** Harvey Mudd College, *Claremont, CA.*
*CS 5: Introduction to Computer Science*, Professors Dodds and Libeskind-Hadas, *Fall 2006*
  Worked as a grader/tutor for the first offering of the new introductory CS course that I had helped design over the summer (see below).

**Course Design Assistant** Harvey Mudd College, *Claremont, CA.*
*CS 5: Introduction to Computer Science*, Professors Dodds and Libeskind-Hadas, *Summer 2006*
  Helped design a new introductory CS course that taught Python and helped build a website to host course information, assignments, and student submissions. Also worked on a simple assembly language emulator for use in student assignments.

## Publications

### Dissertation

Peter Mawhorter. "Artificial Intelligence as a Tool for Understanding Narrative Choices." Available: http://escholarship.org/uc/item/0tn22145, 2016.

### In Progress

Peter Mawhorter, Sercan Şengün, Haewoon Kwak, and D. Fox Harrell. "Identifying Regional Trends in Avatar Customization." *Under review for IEEE Transactions on Games,* 2018.

### Journal and Conference Papers

Peter Mawhorter, Michael Mateas, and Noah Wardrip-Fruin. "Generating Relaxed, Obvious, and Dilemma Choices with Dunyazad." *Proceedings of the 11th Annual AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment,* pp. 58–64, 2015.

Peter Mawhorter, Michael Mateas, and Noah Wardrip-Fruin. "Intentionally Generating Choices in Interactive Narratives." *Proceedings of the Sixth International Conference on Computational Creativity,* pp. 292–299, 2015.

Peter Mawhorter, Michael Mateas, Noah Wardrip-Fruin, and Arnav Jhala. "Towards a Theory of Choice Poetics." *Proceedings of the 2014 Foundations of Digital Games Conference,* 2014.

Brandon Tearse, Peter Mawhorter, Michael Mateas, and Noah Wardrip-Fruin. "Skald: Minstrel Reconstructed." *IEEE Transactions on Computational Intelligence and Artificial Intelligence in Games,* 6(2) pp. 1–10, 2014.

Brandon Tearse, Peter Mawhorter, Michael Mateas, and Noah Wardrip-Fruin. "Lessons Learned From a Rational Reconstruction of Minstrel." *Proceedings of the 26th AAAI Conference on Artificial Intelligence,* pp. 249–255, 2012.

Brandon Tearse, Peter Mawhorter, Michael Mateas, and Noah Wardrip-Fruin. "Experimental Results from a Rational Reconstruction of Minstrel." *Proceedings of the Second International Conference on Computational Creativity,* pp. 54–59, 2011.

Shaker et al.. "The 2010 Mario AI Championship: Level Generation Track." *IEEE Transactions on Computational Intelligence and AI in Games,* 3(4):332–347, 2011.

Peter Mawhorter and Michael Mateas. "Procedural Level Generation Using Occupancy-Regulated Extension." *Proceedings of the 2010 IEEE Symposium on Computational Intelligence and Games,* pp. 351–358, 2010.

Ben Weber, Peter Mawhorter, Michael Mateas, and Arnav Jhala. "Reactive Planning Idioms for Multi-Scale Game AI." *Proceedings of the 2010 IEEE Symposium on Computational Intelligence and Games,* pp. 115–122, 2010.

Peter Mawhorter, Elaine Shaver, Zeke Koziol, and Zachary Dodds. "A Tale of Two Platforms: Low-Cost Robotics in the CS Curriculum." *Journal of Computing Sciences in Colleges,* 24(4):180–188, 2009.

### Demos and Workshop Papers

Peter Mawhorter and Arnav Jhala. "Choice Poetics: A Formal Approach to Narrative Choices." *Accepted for the Gaming and the Arts of Storytelling Symposium,* 2018.

Ali Jahanian, Sercan Şengün, Peter Mawhorter, Haewoon Kwak, and D. Fox Harrell. "Grounding AI-Driven Cross-Cultural Analysis with Community Insights." *Accepted for the Exploring Participatory Design Methods to Engage with Arab Communities Workshop at CHI 2018,* 2018.

Aritro Biswas, Peter Mawhorter, Ferda Ofli, Javier Marin, Ingmar Weber, and Antonio Torralba. "Human-Recipe Interaction via Learned Semantic Embeddings." *Accepted for the Designing Recipes for Digital Food Futures Workshop at CHI 2018,* 2018.

Peter Mawhorter. "Efficiency, Realism, and Representation in Generated Content." *Proceedings of the 12$^{th}$ International Conference on the Foundations of Digital Games,* pp. 72:1–72:4, 2017.

Brandon Tearse, Peter Mawhorter, Michael Mateas, and Noah Wardrip-Fruin. "Minstrel Remixed: User Interface and Demonstration." *The 7$^{th}$ Annual AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment,* 2011.

Peter Mawhorter, Elaine Shaver, Zeke Koziol, and Zachary Dodds. "Mapping for All." *Proceedings of the 2008 AAAI Robot Exhibition and Workshop,* 2008.