

# Peter Mawhorter

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## EDUCATION

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**University of California, Santa Cruz**, Santa Cruz, California, *graduate studies towards Ph.D.*

**Harvey Mudd College**, Claremont, California, *B.A., distinction and honors in computer science, May 2008*

**Claremont High School**, Claremont, California, *June 2004*

## SKILLS AND ABILITIES

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### Professional Skills

- Conduct thorough research using statistical data and secondary sources
- Convey ideas through written reports, visual materials, and presentations
- Collaborate and assist others with research and learning
- Plan, implement, and carry out projects independently

### Programming Languages

- Highly experienced in Python
- Experienced in C/C++, Java, and Javascript
- Have worked with Scala, ABL, Rex, Scheme, ISCAL, Prolog, Clingo, Standard ML, SQL, MATLAB
- Learn new programming languages and paradigms quickly

### Programming Experience

- Embedded devices, including servo and sensor code for microcontrollers and sensor network code
- Linux and Unix systems, including shell scripting and system maintenance
- Operating system code for SOS and OS/161
- Experience with HTML, CSS and Javascript, as well as Python CGI techniques
- Web application building using both raw CGI and the Django framework
- AI behavior programming using ABL for StarCraft gameplay

## EXPERIENCE AND RESEARCH

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**Researcher** Expressive Intelligence Studio, University of California, Santa Cruz

*Professor Mateas, Fall 2009-Present*

Assisted Ben Weber in the construction of an AI for StarCraft that incorporates detailed micromanagement behaviors written in ABL (a reactive planning language) with case-based reasoning. Created the ORE algorithm for procedural level generation, published in the CIG 2010 proceedings. Worked with Brandon Tearse on the Minstrel Remixed story generator. Future work will focus on building a combined generative system for levels and stories.

**Web Application Designer**, Harvey Mudd College, Claremont, California

*Professor Libeskind-Hadas, Summer 2009*

Designed, prototyped, and built a web-based system for registration of summer research participants. Delivered a working system for tracking professors and students engaged in research and generating paperwork based on data entered online which went into use starting in the spring of 2010.

**Teaching Assistant, User Interface Design**, Harvey Mudd College, Claremont, California

*Professor Alvarado, Spring 2009*

**Volunteer Web Consultant, International Humanitarian Foundation**, Boston, Massachusetts

*Heidi McAnnally-Linz, Fall 2008*

Assist executive director with site maintenance and updates at [www.internationalhf.org](http://www.internationalhf.org) and [www.justapparel.org](http://www.justapparel.org). Provide technical assistance to enhance ecommerce functionality and achieve desired content designs.

**Web Developer and Technical Consultant, Dan Ionescu Architects and Planners, San Mateo, CA**

*Sarah Mawhorter, Fall 2008*

Work with DIAP to design, build, and maintain company website (www.diap.com). Built original Python CGI scripts to accommodate DIAP's design criteria.

**Research Assistant, Robotics, Harvey Mudd College, Claremont, California**

*Professor Dodds, Summer 2008*

Built a collection of inexpensive robots with single-camera vision systems to implement FastSLAM on affordable platforms. Demonstrated working FastSLAM-based mapping on several platforms at AAAI 2008. Published a joint paper titled "Mapping for All" in *Proceedings of the 2008 AAAI Robot Exhibition and Workshop*.

**Researcher, Algorithm Design, Harvey Mudd College, Claremont, California**

*Professor Stone, Fall 2007-Spring 2008*

Worked with RealNetworks through the Clinic program at Harvey Mudd College to design a novel algorithm for broadcasting live video streams over the internet using Bittorrent-like methods.

**Teaching Assistant, Operating Systems, Harvey Mudd College, Claremont, California**

*Professor O'Neill, Fall 2007*

**Research Assistant, Bernard Field Station Network, Harvey Mudd College, Claremont, California**

*Professor Erlinger, Summer 2007*

Built and deployed a wireless sensor network for collecting micro-climate data. Ported driver code between OS versions, developed library code for interfacing with SOS, and build data logging and web control software for an ad-hoc wireless sensor net. Successfully deployed a network of motes in the Bernard Field Station and collected temperature data.

**Teaching Assistant, Principles of Computer Science, Harvey Mudd College, Claremont, California**

*Professors Alvarado and Dodds, Spring 2007*

**Teaching Assistant, Introduction to Computer Science, Harvey Mudd College, Claremont, California**

*Professors Alvarado, Dodds, and Libeskind-Hadas, Fall 2006*

**Academic Assistant, Introduction to Computer Science Course Redesign, Harvey Mudd College, Claremont, California**

*Professors Alvarado, Dodds, and Libeskind-Hadas, Summer 2006*

Designed course website, tested course materials, constructed submissions and grading tools, assisted with construction of Harvey Mudd Miniature Machine mock assembler and interpreter. Used TWiki software and the Python programming language.

## PUBLICATIONS

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- o Tarse et al. "Experimental Results from a Rational Reconstruction of Minstrel"  
*Proceedings of the Second International Conference on Computational Creativity, 2011*
- o Mawhorter, P., and Mateas, M. "Procedural Level Generation Using Occupancy-Regulated Extension"  
*Proceedings of the 2010 IEEE Conference on Computational Intelligence in Games, 2010*
- o Weber, B., Mawhorter, P., Mateas, M., Jhala, A. "Reactive Planning Idioms for Multi-Scale Game AI"  
*Proceedings of the 2010 IEEE Conference on Computational Intelligence in Games, 2010*
- o Mawhorter, P., Shaver, E., Koziol, Z., and Dodds, Z. "Mapping for All"  
*Proceedings of the 2008 AAAI Robot Exhibition and Workshop, 2008.*

## HONORS

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- o **Service Award, Computer Science Department, Harvey Mudd College**
- o **Dean's List, Harvey Mudd College, Spring 2005, Spring 2006, Fall 2006, Spring 2007, Fall 2007, Spring 2008**
- o **Harvey S. Mudd Merit Award**

## RESEARCH INTERESTS

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- o Artificial intelligence for game agent and robot behaviors
- o Procedural generation of game content, including emergent behavior authoring
- o Models of narratives in games, including narratives as games and narratives that compliment games