

Gail Carmichael

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Education

September 2009 – present (on hold)

PhD Computer Science (part time)

Carleton University, Ottawa, ON

- Creating a sense of story coherence in open-world adventure and role-playing games

September 2007 – September 2009

Master of Computer Science

Carleton University, Ottawa, ON

- Computer vision and panoramic image matching

September 2002 – May 2007

Bachelor of Computer Science, Honours, Minor in Mathematics

Carleton University, Ottawa, ON

- Software and computing stream, co-op option, CGPA 11.87 out of 12.0 (highest honours)

Peer-Reviewed Publications

Eordanidis, S., Stewart-Gardiner, S., Gee, E., Carmichael, G. **The Effectiveness of Pairing Analog and Digital Games to Teach Computer Science Principles to Female Youth.** In *Proceedings of CCSC Eastern Conference 2016*, 2016.

Harteveld, C., Smith, G.S., Carmichael, G., Gee, E., & Stewart, C. **A Design-Focused Analysis of Games Teaching Computer Science.** In *Proceedings of GLS*, 2014.

Carmichael, G., Mould, D. **A Framework for Coherent Emergent Stories.** In *Proceedings of Foundations of Digital Games*, 2014.

Carmichael, G., Mould, D. **Chronologically Nonlinear Techniques in Traditional Media and Games.** In *Proceedings of Foundations of Digital Games (WIP)*, 2014.

Stewart-Gardiner, C., Carmichael, G., Latham, J., Lozano, N., Greene, J. **Influencing Middle School Girls to Study Computer Science Through Educational Computer Games.** In *Journal of Computing Sciences in Colleges*, 2013.

Carmichael, G., Biddle, R., Mould, D. **Understanding the Power of Augmented Reality for Learning.** In *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2012*. October 2012.

Carmichael, G., Laganière, R., and Bose, P. **Global Context Descriptors for SURF and MSER Feature Descriptors.** *The Seventh Canadian Conference on Computer and Robot Vision (CRV2010)*. 309-316. June 2010.

Carmichael, G. **Matching Spherical Panoramas to Planar Photographs**. M.C.S. thesis, Carleton University, Ottawa, Canada, 2009.

Carmichael, G. **Girls, computer science, and games**. *SIGCSE Bull.* 40, 4, 107-110. Nov. 2008.

Peer-Reviewed Posters and Workshops

Gee, E., Tran, K., Aguilera, E., Harteveld, C., Smith, G., Barnes, J., Folajimi, Y., Stewart-Gardiner, C., & Carmichael, G. **Using Games to Teach Computer Science Concepts**. In *Proceedings of Games, Learning and Society Conference 12*, 2016.

Gee, E. Tran, K. Stewart, C. Carmichael, G., Hopping, L. **The role of story in computer science games for girls**. *Proceedings of the Games, Learning and Society Conference 11*, 2015.

Stewart-Gardiner, C., Carmichael, G., Gee, E., Hopping, L. **Girls Learning Computer Science Principles with After School Games**. *GenderIT*, 2015.

Carmichael, G., Stewart-Gardiner, C. **Gram's House: Encouraging Girls to Consider Computer Science Through Games**. *Grace Hopper Celebration of Women in Computing*, 2013.

Carmichael, G., Mould, D. **Coherent Emergent Stories**. *GRAND 2013*.

Presentations

A Windy Career Path Featuring Computer Science. *TechU.me AppJam*, Ottawa, May 2016. Invited keynote speaker.

Innovation Needs Computer Science. *Ensignt Ignite*, Ottawa, May 2016. Invited speaker.

A Windy Career Path Featuring Computer Science. *Go Code Girl*, Ottawa, February 2016. Invited keynote speaker.

Carmichael, G. **Attracting Women to Computing and Why it Matters**. *Women and Technology*, Ottawa, June 2015. Invited keynote speaker.

Carmichael, G., Compton, K., Gee, E., Smith, G., Stewart-Gardiner, C. **New Perspectives on Gender-Inclusive Game Design**. *Grace Hopper Celebration of Women in Computing*, 2014. Panel (names alphabetical).

Carmichael, G. **Coherent Emergent Stories in Games**. *Grace Hopper Celebration of Women in Computing*, 2013.

Carmichael, G. **Interactive Storytelling**. *Canadian University Software Engineering Conference*, Montreal, January 2013. Invited speaker.

Carmichael, G. **It's Not About the Numbers (Women in Tech)**. *TEDxSandyHillWomen*, Ottawa, December 2012. Invited speaker.

Carmichael, G. **Computer Science and Interactive Storytelling**. *The Conference on Canadian Content in Speculative Arts and Literature (Can-Con)*, Ottawa, 2012. Invited speaker.

Carmichael, G. **A Taxonomy of Techniques in Nonlinear Fiction.** *Experiencing Story With/In Digital Games, Entretiens Jacques Cartier*, 2011.

Carmichael, G. **Cognitive Theories and the Value of Augmented Reality.** *CRA-W Grad Cohort*, 2011. Poster.

Carmichael, G., Villanueva-Rosales, N. **How to Start a "WISE" Group (and Keep it Alive!).** *Ontario Celebration of Women in Computing*, 2010.

Carmichael, G., Hutton, M., Sadowski, C., Smith, G., Sullivan, A. **Girls, Games, and Getting to the First Day.** *Grace Hopper Celebration of Women in Computing*, 2010.

Carmichael, G. **Girls, computer science, and games.** *Grace Hopper Celebration of Women and Computing*, 2009.

Agarwal, A., Bustos Arellano, P., Carmichael, G., Dej, B., Maldonado Rodriguez, A., Ngai, S., Osborne, L., Villanueva-Rosales, N., and Wu, W. **Support Groups for Women in STEM: International Perspectives.** *Grace Hopper Celebration of Women in Computing*, 2009.

Carmichael, G. Dej, B. **How to Build a Women in Science/Engineering/Technology Support Group.** *National Conference on Women in Engineering*. 2008.

Teaching

Awards:

- Faculty of Science Excellence in Teaching Award (**2013**)
- School of Computer Science TA Excellence Award (**2011-2012**)

Teaching assignments:

- COMP 1001: **Introduction to Computers for Arts Students (Summer 2010, Summer, 2011, Fall 2013, Fall 2014)**
- COMP 1405/1005: **Introduction to Computer Science I (Fall 2013, Fall 2014)**
- COMP 1406/1006: **Introduction to Computer Science II (Winter 2014, Fall 2014, Winter 2015)**
- COMP 2401: **Introduction to Systems Programming (Winter 2014)**
- COMP 3007: **Programming Paradigms (Winter 2014, Winter 2015)**

Week long programs designed and/or delivered:

- **Computer Science and Games: Just for Girls**, Enrichment Mini-Course Program, Carleton University (**May, 2008 – 2012, 2014 – 2015**)
- **Adventures in Gaming**, Canadian Science and Technology Museum (**Summer 2013**)

Selected workshops designed and delivered:

- **Anita Borg Birthday Celebration**, Shopify (**February 2016**)
- **Go Code Girl**, University of Ottawa (**April 2013, March 2014, March 2015**)
- **Learn to Program With Python**, Girl Develop It! Ottawa (**June 2014**)
- **Computer Science and Searching Algorithms**, GirlSci Camp and Girls @ Virtual Ventures (**July/August 2013**)
- **Creative Interactive Art and More! Introduction to Programming with Processing**, Girl Develop It Ottawa (**September 2012**)
- **Computer Science and Public Key Cryptography**, Girls @ Virtual Ventures (junior and senior) (**July, August 2012**)
- **Intro to Scratch Programming**, Girl Develop It Ottawa, (**September 2011**)
- **Computer Science, Minimal Spanning Trees, and Finite State Machines**, Girls @ Virtual Ventures (junior and senior) (**July, August 2011**)
- **Connecting Computer Science to Games**, Futures Fair Mock University Lectures, Almonte District High School (**March 2011**)
- **Computer Science and Photography**, Let's Talk Science, St Mark Catholic High School (**January 2011**)

Certifications:

- Carleton University Education Development Center Graduate University Teaching Skills (GUTS) Certificate (**June 2010**)
- Carleton University Education Development Center Certificate in Teaching Skills (**April 2009**)
- Mindtrust Leadership Development Program (**April 2007**)

Service

Grace Hopper Celebration of Women in Computing, Anita|Bees Committee Member (**2017**)

Heidelberg Laureate Forum, Blogger (**2015 – 2016**)

Grace Hopper Celebration of Women in Computing, Communities Committee Member (**2015 – 2016**)

Grace Hopper Celebration of Women in Computing, Scholarship Reviewer (**2014, 2015**)

Anita Borg Institute for Women and Technology, Member of Board of Advisors (board disbanded 2014) (**2010 – 2014**)

Grace Hopper Celebration of Women in Computing, Communities Committee Co-Chair (**2012 – 2014**)

Grace Hopper Celebration of Women in Computing, Poster Reviewer (**2012**)

Carleton University Women in Science Engineering Mentoring Program, Mentor (**2010 – 2013**)

Carleton University Women in Science Engineering, Internal Affairs Executive (**2007 – 2011**)

Let's Talk Science, Science Outreach Volunteer (**2008 – 2011**)

Grace Hopper Celebration of Women in Computing, Online Communities Committee Member (**2010**)

Grace Hopper Celebration of Women in Computing, Volunteer and Head Blogger **(2008, 2009, 2010)**

International Symposium on Mixed and Augmented Reality, Student Volunteer **(2009)**

Carleton Computer Science Society, President **(2006 – 2007)**

Awards

Carleton University Domestic Tuition Doctoral, Departmental Scholarship **(2009 – 2013)**

NSERC Post Graduate Scholarship Doctoral **(2009 – 2011)**

Google Student Travel Award for Grace Hopper Celebration of Women in Computing **(2009)**

Google Canada Anita Borg Memorial Scholarship Finalist **(2008, 2009)**

Carleton University Graduate Student Association Honour Award **(2009)**

NSERC Canada Graduate Scholarship Masters **(2007 – 2009)**

Carleton University Domestic Tuition Masters, Departmental Scholarship **(2007-2009)**

Senate Medal for Outstanding Academic Achievement **(2007)**

NSERC Industrial Undergraduate Student Research Award **(2004, 2006)**

CIPS Ottawa Section Scholarship **(2003, 2005)**

David A. Thomas Scholarship in Computer Science **(2004)**

Nortel Networks Entrance Scholarship **(2002 – 2007)**

Governor General Bronze Academic Medal **(2002)**

Extra-Curricular Activities

The Female Perspective of Computer Science (<http://compscigail.blogspot.com>), Blogger **(2007 – present)**

North Grenville Photography Club, Member and Webmaster **(2009 – present)**

ITF Taekwondo, Second Degree Black Belt Student and Occasional Instructor **(2003 – 2014)**

CRA-W Grad Cohort, Delegate and Poster Presenter **(2009, 2010, 2011)**

Microsoft Imagine Cup Game Design Competition **(2011)**

Google Campus Ambassador Program, Carleton University Ambassador **(2006 – 2009)**

Employment History – Teaching and Education

January 2016 – present

Computing Education Program Manager, Shopify, Ottawa, ON

Leadership in designing and delivering computing outreach and education programs

July 2013 – June 2015

Faculty Instructor, Carleton University, Ottawa, ON

Design and instruction for first, second, and third year computer science courses

May 2008 – 2012, 2014 – 2015

Enrichment Mini-Course Instructor, Carleton University, ON

Design and instruction for ‘Computer Science and Games: Just for Girls!’

April 2013 – September 2013

Summer Camp Curriculum Developer, Canadian Science and Technology Museum, Ottawa, ON

Design for camp schedule, activity scripts for counsellors, slides, and handouts

September 2011 – December 2011, September 2012 – April 2013

Computer Science Teaching Assistant, Carleton University, Ottawa, ON

Guest lectures, tutorial design, office hours, course blog, grading

May 2010 – June 2010, May 2011 – June 2011

Contract Instructor, Carleton University, Ottawa, ON

Design and instruction for ‘Introduction to Computers for Arts and Social Sciences’

September 2009 – April 2010, September 2010 – April 2011

Computer Science Teaching Assistant Mentor, Carleton University, Ottawa, ON

Support for computer science TA’s, workshop design, social activity planning

September 2007 – April 2008, September 2008 – April 2009

Computer Science Teaching Assistant, Carleton University, Ottawa, ON

Tutorial design, office hours, grading

Employment History – Software Development

July 2015 – December 2015

Software Developer, Shopify, Ottawa, ON

Merchant analytics, Home

September 2011 – December 2011

Mobile Web Developer, Heritage Passages Live Virtual Museum, Carleton University, Ottawa, ON

Software design, front-end JavaScript development, SVN

May 2007 – August 2007

Google Summer of Code Participant for Inkscape

C/C++, SVN, solving text and font issues

May 2004 – December 2004, May 2006 – September 2006

Software Developer (Co-op), Ross Video, Ottawa, ON

Embedded systems programming, Linux, C, CVS, developing features for production video switcher

May 2005 – September 2005, January 2006 – April 2006

Software Developer (Co-op), Corel Corporation, Ottawa, ON

Windows programming, C++, Microsoft Visual Studio and Visual Source Safe, solving text and font issues