

Caitlin Kelleher

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Education

Doctor of Philosophy, Computer Science, September 2006

School of Computer Science
Carnegie Mellon University

Dissertation: *Motivating Programming: using storytelling to make computer programming attractive to more middle school girls.*

Committee: Randy Pausch (chair), Jessica Hodgins, Sara Kiesler, Alan Kay (Viewpoints Research, Inc)

Bachelor of Science, Computer Science, December 1998

Virginia Polytechnic and State University (Virginia Tech)

Dissertation Summary

I designed, developed and evaluated a programming system for middle school girls called Storytelling Alice that presents programming as a means to the end of storytelling. Storytelling Alice includes high-level animations that enable users to program social interactions, a gallery of characters and scenery designed to spark story ideas, and a story-based tutorial. To evaluate the impact of storytelling support on girls' motivation and learning, I compared girls' experiences using Storytelling Alice and a version of Alice without storytelling support (Generic Alice). Results of the study suggest that girls are more motivated to learn programming using Storytelling Alice; study participants who used Storytelling Alice spent 42% more time programming, were more than three times as likely to sneak extra time to work on their programs as users of Generic Alice (16% of Generic Alice users and 51% of Storytelling Alice users snuck extra time), and expressed stronger interest in using Alice in the future.

Kelleher, C. [Motivating Programming: Using storytelling to make computer programming attractive to middle school girls](#). PhD Dissertation, Carnegie Mellon University, School of Computer Science Technical Report CMU-CS-06-171.

Internships

Walt Disney Imagineering
Research and Development
Media Research Group, Alan Kay director
Summer 2000

Publications and Presentations

Book Chapters

Kelleher, C. Using Storytelling to Introduce Girls to Computer Programming. In Beyond Barbie and Mortal Kombat: New Perspectives on Gender and Computer Games. Yasmin Kafai, Carrie Heeter, Jill Denner, and Jennifer Sun editors. MIT Press, in press.

Pausch, R., D. Cosgrove, and C. Kelleher. The Development and Future of Alice. In An Introduction to Programming Using Alice. Charles Herbert, author. Course Technologies, 2006.

Journal Papers

Kelleher, C. and R. Pausch. Using Storytelling to Motivate Programming. Communications of the ACM, to appear.

Kelleher, C. and R. Pausch. Lowering the barriers to programming: A taxonomy of programming environments and languages for novice programmers. ACM Computing Surveys, vol. 37 no. 2, June 2005, pages 83-137.

Conference Papers

Kelleher, C., R. Pausch, and S. Kiesler. Storytelling Alice Motivates Middle School Girls to Learn Computer Programming. 2007 Conference on Human Factors in Computing Systems, to appear.

Kelleher, C. Alice: Using 3D Gaming Technology to Draw Students into Computer Science. 2006 Game Design and Technology Workshop and Conference, pages 16-20 (Invited paper).

Kelleher, C. and R. Pausch. Lessons Learned from Designing a Programming System to Support Middle School Girls Creating Animated Stories. 2006 IEEE Symposium on Visual Languages and Human-Centric Computing.

Kelleher, C. and R. Pausch. Stencils-based tutorials: design and evaluation. 2005 Conference on Human Factors in Computing Systems, pages 541-550.

Refereed Posters, Demonstrations, etc.

Kelleher, C. Using Storytelling to Motivate Middle School Girls to Learn Computer Programming. Short paper and Doctoral Seminar at the 2006 Grace Hopper Conference.

Stephenson, C., Hutton, M., Goode, J., and Kelleher, C. Practical Solutions for Addressing K-12 Computer Science Equity Issues. Panel Presentation at the 2006 Grace Hopper Conference.

Kelleher, C. Alice: A Free Tool for Creating Pixar-Style Animated Movies. Workshop Presentation at the 2006 National Educational Computing Conference.

Flanagan, M., I. Bogost, K. Perlin, J. Maloney, and C. Kelleher. Serious Play: At the Edge of Education Gaming. Panel Presentation, Serious Games Summit at the 2006 Game Developers Conference.

Kelleher, C. Leveraging 3D Animation to Motivate Middle School Girls to Learn Computer Programming. Short paper and Doctoral Seminar at the 2006 Symposium on Interactive 3D Graphics and Games.

Kelleher, C., D. Cosgrove, D. Culyba, C. Forlines, J. Pratt, and R. Pausch. Alice 2: Programming without Syntax Errors. Short Paper and Demonstration at the 2002 Conference on User Interface Software and Technology.

Kelleher, C., D. Cosgrove, D. Culyba, C. Forlines, J. Pratt, and R. Pausch. Creating a Programming System for Middle School Girls. Poster at the 2002 Grace Hopper Conference.

Invited Talks

15 November 2006 Keynote Address at the 2006 Game Design and Technology Workshop (Liverpool, United Kingdom)

3 October 2006 Microsoft Research (Redmond, Washington)

20 June 2006 Keynote Address at the 2006 Alice Symposium, Duke University (Durham, North Carolina)

12 June 2006 Invited Talk at the 2006 Teragrid Conference (Indianapolis, Indiana)

10 February 2006 Keynote Address at the 31st Anniversary SISCTI conference, Tecnologico de Monterrey, (Monterrey, Mexico)

Invited Participation

Gender and Computer Games Workshop, Los Angeles, California, 2006.

Industrial Collaborations

Due in part to my work on Storytelling Alice, Electronic Arts has granted permission for the Alice project to use the characters from the most popular PC game in history, The Sims.

Advisory Boards

UCLA and Georgia Tech, Pathways into Programming Project, 2007

Center for Children and Technology, Programming with a Purpose Project, 2004

Press Articles about my work

Jana, R. Can The Sims Make Programming Cool Again? *Business Week.com*, November 9, 2006.

Schiesel, S. Welcome to the New Dollhouse. *New York Times*, May 7, 2006.

Sohn, E. Programming with Alice. *Science News for Kids*, February 22, 2006.

Teaching Positions

Teaching Assistant: 15-392 Introduction to Computer Music, Carnegie Mellon University, Fall 2002

Instructor: Undergraduate Research Seminar – Designing Interactive Narrative Components, Spring 2003

Research Advisor: Generation Faerie – Entertainment Technology Masters student project, Spring 2002

Honors and Awards

National Science Foundation Graduate Fellowship, 1999

Honorable Mention – Computing Research Association 1999 Outstanding Undergraduate Award

Phi Beta Kappa

Upsilon Pi Epsilon