

# Lauren Cairco

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## Education

Clemson University  
Clemson, SC 29631  
Ph.D. in Computer Science in progress

Winthrop University  
Rock Hill, SC 29733  
B.S. in Computer Science, Magna cum laude  
Mathematics minor  
Graduation date: May 2009

## Current Research

Augmented Reality in Inspection and Quality Control

Fall 2009 - present

- Collaborating with BMW and mechanical engineers to design a multimodal user interface for vehicle inspection use
- Designing a system to present the checklist for the car to the inspectors and to allow them to mark items as passing or failing inspection through voice or touch
- Implementing software to render the visual and auditory interfaces for the inspection process
- Evaluating various hardware options for the interface through user studies

Virtual Patients for Nursing Education

Fall 2009 - present

- Developing a system with high-fidelity virtual humans that act as patients who respond to natural language questions from a user
- Collaborating with nursing professors and students for scenario design and eventual software evaluation

## Previous Research Experience

Computer Science Research Experience for Undergraduates (REU) at UNC Charlotte

Summer 2006

- Worked with existing framework to develop new application called Shakespearean Karaoke using C++ , OpenGL, and Haptik
- Shakespearean Karaoke allowed a user to act out a scene with a virtual actress inside of a virtual environment using a joystick and a head-mounted display
- Tied for second place award for end of REU presentations

Cognitive Science REU at UNC Charlotte and Stars Alliance: Research Group  
Fall 2006-Spring 2007

- Modified Shakespearean Karaoke (SK) to be projected on a large screen instead of in a head-mounted display
- Designed and carried out user study to find out how well people learned about the play using SK compared to how well they learned by reading the text
- Presented a poster on SK at a local cognitive science conference
- Wrote paper about SK for VRST 2007 conference submission
- Participated in ethics and research seminar with other REU students

Computer Science REU at UNC Charlotte  
Summer 2007

- Worked with a team to develop new web-based framework for a virtual character named AVARI (Animated Virtual Agent Retrieving Information)
- AVARI uses synthesized speech and speech recognition to answer questions about computer science professors, and is designed to be usable by people unfamiliar with interaction with virtual characters
- Implemented AVARI components in Javascript, PHP, XML, SALT, MySQL
- Designed and implemented AVARI's conversational flow
- Developed software for AVARI's vision in Matlab and Java
- Wrote code to make components from individual group members work together
- Tied for first place award for end of REU presentations

Stars Alliance: Research Group  
Fall 2007-Spring 2008

- Developed an online version of AVARI for a speech applications contest
- Analyzed data gathered from AVARI's conversations
- Developed Girl Scout Internet safety curriculum with other team members
- Installed computers in Habitat for Humanity homes

Human Computer Interaction REU at Virginia Tech  
Summer 2008

- Developed an application to support HCI product design using storyboarding
- Conducted a pilot study to evaluate usability of storyboarding application
- Attended seminars with other students to develop leadership and research skills

Stars Alliance: Team Leader of Research Group  
Fall 2008-Spring 2009

- Mentoring team members and a lower level computer science student
- Leading team meetings, coordinating team events, and making outside contacts
- Developing versions of Internet safety materials appropriate for adults
- Establishing online presence for UNCC and Junior Achievement in Second Life
- Planning and hosting computing outreach events for underrepresented groups

## Publications

Wahid, S., Branham, S., **Cairco, L.**, McCrickard, D.S., and Harrison, S. Picking Up Artifacts: Storyboarding as a Gateway to Reuse. To appear in *Proceedings of Interact 2009: The 12th IFIP Conference on Human-Computer Interaction* (Uppsala, Sweden, August 24-28, 2009).

**Cairco, L.**, Wilson, D.M., Fowler, V., LeBlanc, M. Avari: Animated Virtual Agent Retrieving Information. To appear in *Proceedings of the 47<sup>th</sup> ACM Southeast Conference* (Clemson, SC, USA, March 19-21, 2009). ACMSE '09. ACM, New York, NY.

**Cairco, L.**, and McCrickard, D. S. Encouraging Design Reuse and Contribution in HCI Storyboarding. In ACM Student Research Competition at SIGCSE (Chattanooga, TN, USA, March 4-7, 2009). SIGCSE '09. ACM, New York, NY.

Dahlberg, T., Barnes, T., Rorrer, A., Powell, E., and **Cairco, L.** 2008. Improving retention and graduate recruitment through immersive research experiences for undergraduates. In *Proceedings of the 39<sup>th</sup> SIGCSE Technical Symposium on Computer Science Education* (Portland, OR, USA, March 12 - 15, 2008). SIGCSE '08. ACM, New York, NY, 466-470.

**Cairco, L.**, S. Babu, A. Ulinski, C. Zambaka, L. F. Hodges (2007). Shakespearean Karaoke. In *Proceedings of ACM Virtual Reality Systems and Technology 2007 (VRST07)*, Newport Beach, CA, November 5-7, 2007.

## Work Experience

Webmaster, Fort Mill Church of God, August 2003-June 2007

- Designed, created, and maintained webpages for youth group
- Took pictures at all events and maintained youth group scrapbook

Computer Technician, Shakespeare Composites Incorporated, Summer 2004

- Took inventory of all company computers and their resources
- Removed spyware and adware from computers
- Installed necessary drivers and security programs

## Academic Honors

2009 NSF Graduate Research Fellowship Recipient

Clemson University R.C. Edwards Graduate Fellowship Recipient, Fall 2009

Recipient of 2008 Essam El-Kwae Student-Faculty Research Award, with Dr. Larry F. Hodges and other members of the AVARI team

Accepted into 2008 Google Workshop for Women Engineers

Recipient of South Carolina Palmetto Fellows Scholarship

Recipient of Winthrop University Trustees Scholarship

Recipient of ACM-W Conference Attendance Scholarship for VRST 2007

Member of Phi Kappa Phi Honors Society

Member of Upsilon Pi Epsilon National Computer Science Honors Society

Vice President of Kappa Mu Epsilon National Mathematics Honors Society

President of Winthrop University ACM chapter (Fall 2007-Spring 2009)