

CATHERINE ZANBAKA, PhD

2921 Cravey Drive • Atlanta, GA 30345
www.CatherineZanbaka.com
czanbaka@hotmail.com
404.806.1447

EDUCATION

- University of North Carolina at Charlotte** | Charlotte, NC | GPA: 4.0 Jan 2003 - May 2007
PhD, Information Technology
College of Computing and Informatics
Dissertation: *Examining Direct and Indirect Social Influence with Virtual Characters*
Advisor: Dr. Larry F. Hodges
- Georgia Institute of Technology** | Atlanta, GA | GPA: 4.0 Aug 2001 - Dec 2002
M.S, Human Computer Interaction
Graphics Visualization, and Usability Center
College of Computing
Master's Project: *Virtual Environment for Pain and Anxiety Distraction*
Advisor: Dr. Larry F. Hodges
- Georgia Institute of Technology** | Atlanta, GA | GPA: 3.45 Sept 1996 - May 2000
B.S., Computer Science
College of Computing
- Gordon College** | Barnesville, GA | GPA: 4.0 Sept 1995 - May 1996
Joint Enrollment during high school senior year

CURRENT POSITIONS

- Computational Social Scientist** June 2007 - Present
BAE Systems, Arlington VA
- Leading original research developing and applying computational models to ongoing political and social intelligence problems
 - Managing technical scope and the design and development of geospatial agent based models for enhanced situational awareness
 - Creating conceptual design alternatives, design document and system architecture based on client-driven requirements
 - Managing technical team with expertise in the Agent Based Modeling (ABM), Geographic Information Systems (GIS), and visualization domains
 - Writing white papers for new concepts to seed potential funding opportunities
 - Contributing in the preparation and red team reviews of governmental proposals and providing live and web-based presentations to demonstrate capabilities
 - Managing client relationships and interfaces during various stages of project initiation, planning, execution and delivery
- Adjunct Associate Professor** June 2009 - Present
Division of Human-Centered Computing
Clemson University

PAST EXPERIENCE

Summer Intern

May 2006 - Aug 2006

3D Virtual and Mixed Environments Lab

U.S. Naval Research Laboratory, Washington D.C.

- Designed and developed an application for LEGO assembly in augmented reality where latency can be manipulated.
- Designed a within-subjects experimental study using the above application to examine how different levels of latency affect task performance in an augmented reality environment.

Graduate Research Assistant

Jan 2003 – May 2007

Virtual Environments Group, Future Computing Lab

Department of Computer Science, University of North Carolina at Charlotte

- Led a study on the effect of travel technique on cognition in virtual environments.
- Led a series of experiments which replicate classical tests of human social interaction, substituting virtual humans into the human role. This basic research is done to establish whether or not virtual characters produce the same responses as real characters.

Summer Intern

June 2004 - Aug 2004

Virtual Reality Lab

U.S. Naval Research Laboratory, Washington D.C.

- Conducted a task analysis and designed an application to support Marines in target location.
- Ran an experiment that compared depth perception in augmented reality and in the real world.

Graduate Research Assistant

Aug 1999 – Dec 2002

Graphics, Visualization, and Usability Center

College of Computing, Georgia Institute of Technology

- Designed and implemented an interactive immersive gaming environment in VR for pain and anxiety distraction for children undergoing cancer treatment.

Research and Development Engineer

May 2000 - July 2001

Intercept Technology Inc., Atlanta, Georgia

- Designed and developed algorithms to optimize the performance of Connex, the company's circuit auto-routing software
- Developed and maintained new components for the company's main product, Pantheon, a CAD PCB design software package

Intern/Part Time CGI and Web Developer

June 1998 - Aug 1999

United Bank, Zebulon, Georgia

- Wrote CGI programs for online banking applications in C
- Designed and administrated the web page

SKILLS

- Languages:** Fluent in Arabic, intermediate in French.
- ABM:** Repast, SWARM, Netlogo.
- Statistics:** Minitab, SPSS, R, and other statistical analysis utilities.
- Programming:** C, C++, C#, Java, MS Visual Studio, Eclipse, OpenGL, Visual Basic, Simple Virtual Environments (SVE).
- Graphics:** 3D Studio MAX, Maya, Adobe Photoshop, Adobe Illustrator, Adobe Premiere, Final Cut Pro, Macromedia Director and Macromedia Flash, Haptek.
- Platforms:** Windows, Unix, Solaris, and MacOS.
- WWW:** HTML, CGI, DreamWeaver, MS FrontPage, JavaScript, Servlets, and JSP.
- Miscellaneous:** CVS - Concurrent Versions System, MS Project, MS Visio, UML.

PUBLICATIONS

BOOK CHAPTERS AND JOURNAL PAPERS

- [1] **Zanbaka, C.**, Lok, B., Goolkasian, P., Hodges, L. F. "Lessons Learned in Assessing Human-Virtual Human Interaction". *Advances in Virtual Environments Technology: Musings on Design, Evaluation, & Applications*, (K. M. Stanney (Ed.)), Mahwah NJ: Lawrence Erlbaum Associate, 2005.
- [2] **Zanbaka, C.**, Lok, B., Babu, S., Ulinski, A., Hodges, L. F. (2005). Comparison of path visualizations and cognitive measures relative to travel technique in a virtual environment. *IEEE Transactions on Visualization and Computer Graphics* 11. 6. pp. 694-705.

REFEREED CONFERENCE AND WORKSHOP PAPERS

- [3] **Zanbaka, C.**, HandUber, J. and Saunders-Newton, D. 2009. Modeling and Simulating Community Sentiments and Interactions at the Pacific Missile Range Facility. To Appear in *AAAI Fall Symposium 2009: Complex Adaptive Systems and the Threshold Effect: Views from the Natural and Social Sciences*.
- [4] Cairco, L., Babu, S., Ulinski, A., **Zanbaka, C.**, and Hodges, L. F. 2007. Shakespearean karaoke. In *Proceedings of the 2007 ACM Symposium on Virtual Reality Software and Technology*, S. N. Spencer, Ed. VRST '07. ACM, New York, NY, 239-240.
- [5] **Zanbaka, C.**, Ulinski, A., Goolkasian, P., Hodges, L. F. "Social responses to virtual humans: Implications for future interface design." *Honorable Mention for Best of CHI Award*. In *Proceedings of CHI 2007*, ACM Press, 1561 - 1570.
- [6] Ulinski, A., **Zanbaka, C.**, Wartell, Z., Goolkasian, P., Hodges, L. F. "Two handed selection techniques for volumetric data." In *Proceedings of 3DUI 2007*, IEEE Press, 107-114.

-
- [7] **Zanbaka, C.**, Goolkasian, P., Hodges, L. F. (2006). "Can a virtual cat persuade you? The role of gender and realism in speaker persuasiveness." In *Proceedings of CHI 2006*, ACM Press, 1153 - 1162. Acceptance rate: 23%
- [8] **Zanbaka, C.**, Lok, B., Babu, S. Xiao, D., Ulinski, A, and Hodges L.F. (2004). "Effects of Travel Technique on Cognition in Virtual Environments," In *Proceedings of IEEE Virtual Reality 2004*, 149-156, 286. Acceptance rate: 20.3%
- [9] **Zanbaka, C.** (2005). "Challenges in Virtual Human Research." *The Third Young Investigator's Forum in Virtual Reality*, February 24-25, 2005, POSTECH, Pohang, South Korea.
- [10] Livingston, M., **Zanbaka, C.**, Swan, J. E., Smallman, H. (2005). "Objective Measures for the Effectiveness of Augmented Reality," *IEEE Virtual Reality 2005*, Bonn, Germany, March 12 - 16. (Poster)
- [11] Babu, S., **Zanbaka, C.**, Jackson, J., Chung, T., Lok, B., Shin, M., Hodges, L. F. (2005). "Virtual Human Physiotherapist Framework for Personalized Training and Rehabilitation," *Graphics Interface 2005*, Victoria, British Columbia, Canada, May 9 - 11, 2005. (Poster)
- [12] **Zanbaka, C.**, Ulinski, A., Goolkasian, P., Hodges, L. F. (2004). "Effects of Virtual Human Presence on Task Performance," *Proceeding of the International Conference on Artificial Reality and Telexistence (ICAT)*, pp. 174-181.

INVITED PAPERS

- [13] **Zanbaka, C.**, Lok, B., Goolkasian, P., Hodges, L. F. (2005). "Lessons Learned in Assessing Human-Virtual Human Interaction." *First International Conference on Virtual Reality*, Las Vegas, Nevada 22 - 27 July.
- [14] Ziemkiewicz, C., Ulinski, A., **Zanbaka, C.**, Hardin, S., Hodges, L. F. (2005). "Interactive Digital Patient for Triage Nurse Training." *First International Conference on Virtual Reality*, Las Vegas, Nevada 22 - 27 July.

VIDEOS, DEMONSTRATIONS, AND PANELS

- [15] **Zanbaka, C.**, Lok, B., Babu, S., Xiao, D., Ulinski, A., Hodges, L.F. (2004). "Effects of travel technique on cognition in virtual environments." *IEEE Virtual Reality 2004 Video Proceedings*.
- [16] Ziemkiewicz, C., **Zanbaka, C.**, Ulinski, A., Suma, E., Powell, E., Hodges, L. F., Godwin, A., Chaffin, A., Babu, S. "Let's Talk about UNC Charlotte: A conversation with a Virtual Human." Research Demonstration at the *IEEE Virtual Reality 2006* Conference, Alexandria, VA, USA, March 25-29, 2006.
- [17] Kyle Johnsen, **Catherine Zanbaka**, Daniel Acevado, and Sharif Razzaqu. "Building the Future of and a Career in VR". Panel (organizer: Benjamin Lok) at the *IEEE Virtual Reality 2007* Conference, Charlotte, NC, USA, March 10-14, 2007.

TECHNICAL REPORTS

- [18] J. Edward Swan II, Mark A. Livingston, Harvey S. Smallman, Joseph L. Gabbard, Dennis G. Brown, Yohan Baillet, Simon J. Julier, Greg S. Schmidt, **Catherine Zanbaka**, Derborah Hix, and Lawrence J. Rosenblum, "A Methodology for Quantifying Medium- and Far-Field Depth Perception in Optical, See-Through Augmented Reality", Technical Report #MSU-05031, Department of Computer Science and Engineering, Mississippi State University.

INVITED TALKS

Catherine Zambaka. "How virtual life can influence you: The study of personality, persuasion, and social facilitation with virtual characters." *Human Computer Interaction Seminar, Georgia Institute of Technology*, November 10, 2005.

Catherine Zambaka. "Effect of Travel Technique on Cognition in Immersive Virtual Environments." *Geometry, Graphics, Vision, Visualization/Simulation Seminar, University of Florida*, March 5, 2004.

Catherine Zambaka. "Effects of Virtual Human Presence on Task Performance." *Graduate Seminar, University of North Carolina at Charlotte*, November 19, 2004.

Amy Ulinski and **Catherine Zambaka**, "If a digital human gave you a compliment, would it brighten your day?" *Center for Human Computer Interaction and 3D Interaction Group, Virginia Tech*, October 25, 2004.

SERVICE ACTIVITIES

Conference & Workshop Committees

- Member of Organizing Committee, AAAI Fall Symposium 2009 - *Complex Adaptive Systems and the Threshold Effect: Views from the Natural and Social Sciences*
- Student Volunteer Co-chair, IEEE Virtual Reality 2008
- Student Volunteer Co-chair, IEEE Virtual Reality 2007
- Video Co-chair, IEEE Virtual Reality 2006

Reviewer

- International Journal of Computer Studies (IJHCS) 2207, 2008
- IEEE Computer Graphics and Applications 2007
- IEEE Transactions on Visualization and Computer Graphics (TVCG) 2007
- IEEE Virtual Reality 2003, 2004, 2005, 2006, 2007
- IEEE Symposium on 3D User Interfaces 2007
- *Computers & Graphics*, 2006, *Journal of Systems & Applications in Computer Graphics*
- ACM VRST 2002

Student Volunteer

- IEEE Virtual Reality 2004, 2006
- ACM CHI 2006
- HCI-International 2005

Professional Organizations

- Member, IEEE
- Member, ACM

University

- Member, UNC Chapter of Phi Kappa Phi Honor Society
- Member ACM-W
- Student Member, College of Computing and Informatics Graduate Committee
- Member, Gamma Beta Phi Honor Society, Aug 1999 - May 2000
- Gave weekly research demonstrations for potential students, visiting researchers, and future faculty. Active participant in recruiting activities at UNC Charlotte.

HONORS AND AWARDS

- Awarded the CRA-W Travel Grant to attend CHI 2009
- 1st Place in Category II at the 6th *Annual Niner Research Across the Disciplines Graduate Research Fair*. “Can a virtual cat persuade you? The role of gender and realism in speaker persuasiveness.” April 2006, UNC-Charlotte.
- 3rd Place in Category II at the 5th *Annual Niner Research Across the Disciplines Graduate Research Fair*. “Effects of Virtual Human Presence on Task Performance.” April 2005, UNC-Charlotte.
- One of 14 students internationally selected to attend the *Third Young Investigators Forum in Virtual Reality (YVR 2005)* held in Pohang, Korea.
- HOPE Scholar, 1996 – 2000
- David J. Arnold Memorial Scholarship, 1996 – 1998
- Faculty Honors, Georgia Institute of Technology, Fall 1999
- Dean’s List, Georgia Institute of Technology, 1996 – 2000, 10 times

OTHER

- **Publicity:** Featured in the *UNC Charlotte Magazine*, “Virtually Real: IT Group Creates Environments that Simulate Reality”. Summer 2003, Vol. 11, No. 1.
- **Citizenship Status:** USA

REFERENCES

- *Available upon request*