

# Evan Barba

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## Research Interests

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Multi-Scale Design, Mixed Reality, Embodied Cognition, Sustainable Design

## Education

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### **Georgia Institute of Technology** (2006-Present)

*Ph.D. Candidate in Human-Centered Computing*

Dissertation Topic: A Scale Framework for the Design and Analysis of Mixed Reality Experiences

Advisor: Dr. Blair MacIntyre

Committee: Dr. Jay Bolter, Dr. Ashok Goel, Dr. Michael Nitsche

### **New York University** (2003-2006)

*M.S. Computer Science*

Thesis Topic: Computer Vision for Public Interaction

Advisors: Dr. Christoph Bregler, Dr. Davi Geiger

### **Brown University** (1994-1999)

*A.B. Modern Culture and Media Studies (Honors)*

Thesis Topic: Melotrauma

Advisors: Dr. Christopher Amirault, Dr. Edward Brown

*Sc.B. Neuroscience*

Advisor: Dr. Cristina Alberini

## Research Experience

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### **Georgia Institute of Technology - Augmented Environments Lab** (2008-present)

*Graduate Research Assistant with Dr. Blair MacIntyre*

My research uses the concept of spatial scale to develop a cognitive framework for the design and analysis of Mixed Reality experiences.

### **Georgia Institute of Technology - BrainLab** (2006-2008)

*Graduate Research Assistant with Dr. Melody Moore Jackson*

My research investigated using Steady-State Visual Evoked Potentials (SSVEP) to allow users with severe physical disabilities to navigate and control items in a home environment.

### **Georgia Institute of Technology - Emergent Game Group** (2006-2007)

*Graduate Research Assistant with Dr. Celia Pearce*

My research focused on an ethnographic study and documentary film that explored the role of costuming as a boundary object in "fan" culture.

## Teaching Experience

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### Curriculum Development and Instruction

*LCC 6650 Experiential Handheld AR Project Studio*

Co-Instructor: Rebecca Rouse

Prof. Blair MacIntyre

*CS 8803 Handheld Augmented Reality Game Design*

Prof. Blair MacIntyre

*CS 8803 Building Ubiquitous Devices*

Prof. Thad Starner

*CS 8002 Advanced Seminar in Human-Centered Computing*

Co-Instructor: Sarita Yardi

### Teaching Assistant

*CS 8803 Handheld Augmented Reality Game Studio*

Prof. Blair MacIntyre

*CS 8803 Handheld Augmented Reality Game Design*

Prof. Blair MacIntyre

### Guest Lectures

*CS 4605 Mobile Human-Computer Interaction*

**Mobile Handheld Augmented Reality**

Instructor: James Clawson

*CS 3790 Introduction to Cognitive Science*

**Brain-Computer Interfaces**

**Distributed Cognition**

**Four Cognitive Theories for Technologists**

Instructor: Dr. Rosa Arriaga

### Students Advised

Sadir Hussein – BrainLab

Arun Kumar Elangovan – BrainLab

Daniel Kestranek – AEL

Libo Su – AEL

Daniel Farmer – AEL

## Conference Papers (peer-reviewed)

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**Barba E.,** MacIntyre B. (2011). A Scale Model of Mixed Reality. In *Proceedings of the Eighth ACM Conference on Creativity and Cognition* (Atlanta, Georgia, USA, November 3 - 6, 2011). C&C '11. ACM, New York, NY, (in Press). [Acceptance Rate: 23%]

Xu, Y., **Barba, E.,** Radu, I., Shemaka, R., and MacIntyre, B. (2011). Pre-patterns for Designing Embodied Interactions with Handheld Augmented Reality Games. In *Proceedings of the 10<sup>th</sup> IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2011)*. (Basel, Switzerland, October 26-29, 2011). IEEE, New York, NY.

**Barba, E.,** Rouse, R., Bolter, J., and MacIntyre, B. (2010). Thinking Inside the Box: Meaning Making in a Handheld Augmented Reality Experience. In *Proceedings of the 9<sup>th</sup> IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2010)*. (Seoul, Korea, October 13-16, 2010). IEEE, New York, NY. [Acceptance Rate: 16%].

**Barba, E.,** Xu, Y., MacIntyre, B., and Tseng, T. (2009). Lessons From a Class on Handheld Augmented Reality Game Design. In *Proceedings of the 4<sup>th</sup> international Conference on Foundations of Digital Games* (Orlando, Florida, April 26 - 30, 2009). FDG '09. ACM, New York, NY, 2-9. [Acceptance Rate: 28.3%].

Jackson, M., Mappus, R., **Barba, E.,** Hussein, S., Venkatesh, G., Shastry, C., and Israeli, A. (2009). Continuous Control Paradigms for Direct Brain Interfaces. In *Proceedings of the 13<sup>th</sup> International Conference on Human-Computer Interaction. Part II: Novel Interaction Methods and Techniques*, Julie A. Jacko (Ed.). Springer-Verlag, Berlin, Heidelberg, 588-595.

Xu, Y., Gandy, M., Deen, S., Schrank, B., Spreen, K., Gorbsky, M., White, T., **Barba, E.,** Radu, I., Bolter, J., and MacIntyre, B. (2008). BragFish: Exploring Physical and Social Interaction in Co-located Handheld Augmented Reality Games. In *Proceedings of the 2008 international Conference on Advances in Computer Entertainment Technology* (Yokohama, Japan, December 03 - 05, 2008). ACE '08, vol. 352. ACM, New York, NY, 276-283.

## Journal Papers (peer-reviewed)

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**Barba, E.,** MacIntyre, B., Mynatt, E. (2012). Here We Are! Where Are We? Locating Mixed Reality in the Age of the Smartphone. *IEEE Proceedings Centennial Year Special Issue "Frontiers of Audiovisual Communications: New Convergences of Broadband Communications, Computing and Rich Media."* (in press)

Xu, Y., **Barba, E.,** Radu, I., Gandy, M., MacIntyre, B. (2011). Chores for Fun: Understanding Social Play in Board Games for Digital Tabletop Game Design. In *Proceedings of DiGRA Conference 2011 Think, Design, Play*. Utrecht, Netherlands (in press)

## Workshop Papers (peer-reviewed)

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**Barba, E.** (2008). Getting Mod: a look at modularity in mobile systems. In *Proceedings of the 9<sup>th</sup> Workshop on Mobile Computing Systems and Applications* (Napa Valley, California, February 25 - 26, 2008). HotMobile '08. ACM, New York, NY, 22-26. [Acceptance Rate: 23%]

**Barba, E.** (2006). "Infrared Spotlight." Projecting Off the Wall. 4<sup>th</sup> IEEE International Workshop on "Projector-Camera Systems" ProCams 2006. New York, NY.

## Juried Demonstrations and Exhibitions

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**Barba, E.,** Rouse, R., MacIntyre, B., and Bolter, J. (2009). (in)box with Malcom. In *Proceedings of the Seventh ACM Conference on Creativity and Cognition* (Berkeley, California, USA, October 26 - 30, 2009). C&C '09. ACM, New York, NY, 455-456.

**Barba, E.,** Huang, K. (2006). "Public Space Invaders." *Come Out and Play 2006*. New York, NY.

## Invited Museum Exhibitions

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**Barba, E.** and Huang, K. (2009-2010). "Public Space Invaders." *Actions: What You Can Do With the City, Installation view at the Canadian Centre for Architecture, Montréal* ©CCA, and *Graham Foundation for Advanced Studies in the Fine Arts*. Chicago, IL.

## Invited Talks and Panels

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"*Exploring the Documentary.*" The Association for the Study of Play (TASP). (2010).  
Panelist discussing the use of ethnographic film as a research and classroom method for the study of communities of play.

"*The Worlds Outside.*" ARGfest. (2010).  
Talk discussing the role of Augmented Reality technology in creating Alternate Reality Games.

## Research Grants

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### Funded

*Evoked Response Direct Brain Interfaces for Continuous Control*  
National Science Foundation, HCC SGER. (2008)  
P.I.: Melody Moore Jackson

### Unfunded

*Foundations of Effective Augmented Reality Design*  
National Science Foundation, HCC (2010)  
Co-P.I. - Blair MacIntyre, Jay Bolter, Michael Nitsche

*Creative Design for Augmented and Mixed Reality*  
National Science Foundation, Creative IT. (2009)  
Co-P.I. - Blair MacIntyre, Jay Bolter, Michael Nitsche

## Technical Reports

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**Barba, E.** and Jackson, M.M. (Georgia Institute of Technology). (2007). *Evoking Visual Responses with Functional Near-Infrared*. Archinoetics LLC.

**Barba, E.** and Nguyen, Duy (Georgia Institute of Technology). (2007). *Evaluating the Potential of Outdoor AR Multiplayer Games*. Nokia Research.

## Patents

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Tunick, J., Rizzaro, T., **Barba, E.**, Huang, K. (2008). System and method for monitoring viewer attention with respect to a display and determining associated charges.  
USPTO# US 2008/0147488 A1

## Professional Experience

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### Technical

*Lead System Engineer* (2006-2008)

StudioIMC, New York, NY

Oversaw all aspects of development for FacePLATE audience measurement system.

*Assistant Database Administrator* (2003-2004)

NYU College of Dentistry, New York, NY

Maintained student records database.

*Assistant Mechanic* (2001-2002)

MacMechanix, New York, NY

Installed and maintained enterprise networks for various clients.

### Production

*Art Department*

Arff! (2002) – Production Designer, Ugly Productions Inc.

Plead (2002) – Production Designer, Ugly Productions Inc.

Freshening Up (2002) – Property Master, mayFly Entertainment

*Editorial Department*

Sweet Home Alabama (2003) – 2<sup>nd</sup> Assistant Editor (uncredited), D&D Films

Conventional Dress (2009) – Editor, Emergent Game Group

*Production Department*

Crooked Lines (2003) – 2<sup>nd</sup> Assistant Director, Crooked Lines Productions, LLC

G (2002) – Production Assistant, Andrew Lauren Productions

Infested (2002) – Production Assistant, City Block Productions

The Victim (2001) – Key Production Assistant, 7<sup>th</sup> Floor

Egg-The Arts Show (1999) – Assistant Producer, WNET/Thirteen

### Business

*Account Representative* (Series 7 and 63 Licensed) (2003-2006)

Vandham Securities, New York, NY

Advised and executed securities trades for institutional and high net-worth investors.

## Affiliations and Accreditations

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ACM – Association of Computing Machinery

IEEE – Institute of Electrical and Electronics Engineers

ILSSA – Impractical Labor in the Service of Speculative Arts

LEED Green Associate – Leadership in Energy and Environmental Design

## Service

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### Reviewing

CHI - 2012 (Computer-Human Interaction)  
ISMAR - 2011 (International Symposium on Mixed and Augmented Reality)  
C&C - 2011 (Creativity and Cognition)  
ITS - 2011 (Interactive Tabletops and Surfaces)  
"Meet Me at the Fair" - 2011 Eds.: Pearce, C., Rouse, R., Schweizer, B.

### Committees

C&C 2011 - Organizational Committee/Registration Chair  
ISMAR 2012 - Organizational Committee  
FutureMedia 2012 - Mixed Reality Industry Roundtable

### Volunteer

Lab Manager - AEL  
Lab Manager - BrainLab  
Lab Designer - Rapid Prototyping Lab  
Volunteer - East Lake Terrace Neighborhood Association  
CHI 2010 - Local Tour Guide/Publicity Video Producer

## Skills

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### Materials

Arc Welding  
Circuit Design and Fabrication  
Injection Molding  
Intermediate Woodworking  
Laser Engraving and Cutting  
Rapid Prototyping (3D Printing)  
Tile Cutting and Installation  
Vacuum Forming

### Virtual

Microcontroller Programming (C and Assembly)  
Programming Languages (C/C++/C#, Java, Javascript, Python, HTML/CSS/PHP, others)  
Programming Environments (iOS/Xcode, Eclipse, Visual Studio)