

IULIAN RADU, Ph.D.

Embodied and Immersive Technology Designer, Product Manager, UX Researcher

Email:

iulian@gatech.edu

Portfolio:

<http://www.cc.gatech.edu/~iulian>

LinkedIn:

<https://www.linkedin.com/in/iulian-radu-144490b5>

SUMMARY

- Ph.D. in Human Centered Computing, expert in UX research & design of educational augmented reality technology for elementary school children.
- Experienced product manager, UX researcher, technology designer and programmer, passionate about developing emerging technologies and novel applications.
- Winner of awards for product design, academic research publications, and teaching aptitude. Author of 31 academic research publications, cited 300+ times.

EDUCATION

- | | |
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| Ph.D. Human Centered Computing – Georgia Institute of Technology | 2016 |
| Focus: UX Research, Augmented Reality, Children and Educational Technology | |
| B.Sc. Computer Science (Hon.), Commerce (Min.) – University of British Columbia | 2007 |
| Focus: Cognitive Science and Distributed Systems | |

SELECTED PROFESSIONAL EXPERIENCE

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|---|-----------|
| DOCTORAL RESEARCHER – Georgia Institute of Technology | 2008-2016 |
| Developer and manager of UX research for designing children's augmented reality experiences. | |
| AR RESEARCH & PRODUCTION MANAGER - PBS KIDS Digital | 2012-2013 |
| Lead game designer, manager of research and production of AR educational games. | |
| RESEARCH SCIENTIST / PROJECT MANAGER INTERN – Samsung Electronics | 2011 |
| Manager of a multi-disciplinary team prototyping whole-body experiences for children. | |
| RESEARCH SCIENTIST INTERN – Avaya Research Labs | 2009 |
| Qualitative UX researcher and developer of software for visualizing large-scale microblogging data. | |
| NSERC STUDENT RESEARCHER – University of British Columbia | 2006-2007 |
| Developer of algorithms and visual programming UI for mobile agents and knowledge aggregation. | |
| SOFTWARE ENGINEER – MacDonald Dettwiler & Associates Aerospace | 2002-2003 |
| Developer of software and communication standards for satellites. | |

SKILLS AND HIGHLIGHTS

- **Product Manager** of multi-disciplinary project teams composed of developers, producers and researchers, for purposes of research and production of augmented-reality, virtual-reality and mixed-reality commercial products and research prototypes.
- **Lead Experience Designer** and production manager for mobile & desktop apps including the PBS KIDS educational game *Cyberchase Shape Quest* (Product received 500k+ downloads; iTunes Top 10 Educational Apps; Webby Award 2014 Finalist, 2015 Honoree; iKids Award 2015 Finalist)
- **UX Researcher** proficient in user-centered research and design, qualitative & quantitative user studies, formative and summative research, interviews, surveys, focus groups, SPSS data analysis.
- **Technical Developer** with expertise in C# (Unity3D), C, C++, Java, Objective-C, Python, PHP; for development of mobile, desktop and tangible products.
- **Award Winner** for scientific research and innovation in AR/VR and child-centered technology design.

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Summary

- Ph.D. in Human Centered Computing, expert in research & design of educational augmented reality technology for elementary school children.
- Experienced product manager, UX researcher, technology designer and programmer, passionate about developing emerging technologies and novel applications.
- Winner of awards for commercial product design, academic research publications, and teaching aptitude.
- Author of 31 academic research publications, cited 300+ times (as of October 2016 via Google Scholar). Publication topics: user experience research, educational technology, human computer interaction, 3D video game design, virtual and augmented reality, child developmental psychology, artificial intelligence, educational research, distributed systems and internet-of-things.

Education

- 2016 Ph.D. Human Centered Computing
Georgia Institute of Technology, USA
Dissertation Title: *Exploring the Usability of Augmented Reality Interaction Techniques During Children's Early Elementary-School Years*
Specialization: Educational Technology and Child Development
Minor Focus: Quantitative Research Methods
Thesis Committee: Blair MacIntyre (advisor), Ashok Goel, Ellen Do, Stella F. Lourenco (external, Emory University), Alissa N. Antle (external, Simon Fraser University)
- 2007 B.Sc. (Hon) Computer Science, with Commerce Minor
University of British Columbia, Canada
Thesis Title: *NEMOS: A Mobile-Agent Based Service Architecture for Lightweight Mobile Devices*
Thesis Advisor: Son T. Vuong (University of British Columbia)

Professional Experience

- 2008-2016 **GEORGIA INSTITUTE OF TECHNOLOGY :: Augmented Environments Lab**
Doctoral Researcher – Designed and researched augmented-reality experiences for children, specifically studying usability and educational applications through user studies, UX- and video-game design, prototyping, qualitative and quantitative analysis, multi-disciplinary project teams, and collaborations with corporate sponsors. Managed teams of student developers and researchers, and collaborated with external stakeholders. Won awards for scientific research and innovation.
- 2012-2013 **PUBLIC BROADCASTING SERVICE :: PBS KIDS Digital**
Augmented Reality Research & Production Manager – Managed the design, research, and production of educational augmented-reality apps and research prototypes. Lead game designer and production manager for the children's educational app *Cyberchase Shape Quest* (500k+ downloads; Top 10 Educational Apps on iTunes Store; Webby Award 2014 Finalist, 2015 Honoree; iKids Award 2015 Finalist; Research results published in international conferences).

- 2011 **SAMSUNG ELECTRONICS :: Advanced Technologies Research Labs**
Research Scientist / Project Manager Intern – Managed a multi-disciplinary team in the development of a whole-body collaborative application for children’s education. Activities included project management, future forecasting, user experience design, production of concept videos, and design & implementation of multi-platform software.
- 2009 **AVAYA RESEARCH LABS :: Collaborative Applications Group**
Research Scientist Intern – Developed experimental interfaces for understanding and exploration of large-scale microblogging systems such as Twitter. The self-driven project consisted of designing survey instruments, statistical analysis of microblogging data, metaphorical UI interface design, and implementation of visualization software.
- 2007-2008 **GEORGIA INSTITUTE OF TECHNOLOGY :: Cognitive Computing Lab**
Graduate Research Assistant – Part of a team of graduate researchers, designed a system for authoring intelligent characters in virtual worlds. Own tasks focused on the design of interfaces for behavior demonstration and personality modeling. Research involved high-level system design and formative user studies.
- 2007 **UNIVERSITY OF BRITISH COLUMBIA :: Computational Intelligence Lab**
NSERC Student Researcher – Aided in the development and testing of an intelligent user interface for teaching mathematics to high-school students. Tasks involved system design and implementation, performing user studies and data analysis.
- 2006-2007 **UNIVERSITY OF BRITISH COLUMBIA :: Distributed Systems Lab**
NSERC Student Researcher – Developed a mobile-agent platform for Nokia mobile phones, initiated a project on knowledge integration over peer-to-peer networks, and developed visual programming environment for knowledge aggregation using mobile agents and web services.
- 2005-2006 **AXONWAVE SOFTWARE :: Quality Assurance**
Testing Engineer – Developed test plans and conducted software quality assurance testing for web-based platform for linguistic analysis and customer-facing services. Own initiatives led to development of software tools for product testing and automation.
- 2004 **SAP BUSINESS OBJECTS :: Research and Development Group**
R&D Software Architect Intern – Developed user interfaces for business-intelligence programming environment. Improved functional-language compiler used for corporate projects, and designed “extreme programming” tools for code refactoring & generation.
- 2002-2003 **MACDONALD DETTWILER AND ASSOCIATES :: RADARSAT-2 Aerospace**
Software Engineer – Designed and integrated software for managing satellite activities. Developed XML-based communication software and administered communication standards for entire project. Completed multiple improvements to system standards and design, aiding software development and improving team productivity.

Teaching Experience

- 2014-2016 **GEORGIA INSTITUTE OF TECHNOLOGY :: School of Interactive Computing**
Graduate Teaching Assistant – Conducted grading, teaching, curriculum design for the following courses. Was finalist for institute-wide Outstanding Graduate Teaching Award.
- 2016 –Educational Technology (graduate)
 - 2016 –Educational Technology (undergraduate)
 - 2016 - Human Computer Interaction (graduate)
 - 2015 - Human Computer Interaction (undergraduate)
 - 2015 - Information Visualization (graduate)
 - 2015 - Information Visualization (undergraduate)
 - 2014 – 3D Video Game Design (graduate)

2006-2007 **UNIVERSITY OF BRITISH COLUMBIA :: Department of Computer Science**
Undergraduate Teaching Assistant – Conducted laboratories, grading and administrative duties for the following courses. Received the university's Award for Best Undergraduate Teaching Assistant in Computer Science.

2007 - Advanced Operating Systems (undergraduate)

2006 - Theory of Computation (undergraduate)

Technology Development Skills

Programming Languages

- C++
- C#
- C
- Objective-C iOS / Cocoa
- Java Android / Processing / J2SE / J2ME
- Python
- PHP
- SQL
- Flash ActionScript
- Visual Basic
- VBA
- Pascal
- LISP, ML
- Logo
- Smalltalk (Squeak)
- Assembler (x86, M68HC12)

Applications / Game Engines

- Unity 3D
- MS Visual Studio IDE
- Eclipse IDE
- XCode IDE
- Processing / Arduino IDE
- SPSS
- Matlab
- Internet Information Server
- Adobe Photoshop, Illustrator

Programming Skills

- Excellent Programming and Debugging Skills
- Object-Oriented Design & Analysis
- Multi-Threaded Development
- 3D Game Design, Programming and Assessment
- Whole Body Natural Interaction (Kinect SDK, OpenNI SDK)
- 3D and 2D UI Programming
- Networking Applications (Bluetooth, TCP/IP)
- Graphics Development (OpenGL, Direct3D, Unity3D)
- Mobile Platforms (iPhone, Android, Nokia 6550, Arduino, RaspberryPi)
- Relational Database Design (SQL)
- Embedded Linux on Raspberry Pi
- Embedded Microcontroller Development and Custom Hardware (x86, M68HC12, Arduino)

Networking

- In-depth understanding of distributed systems and networking protocols such as DNS/DHCP/TCP/IP
- Personally implemented HTTP, FTP, SMTP servers, Network Bridges and Firewalls
- Experience with programming low-level communications (Ethernet, Bluetooth, XBee/802.15.4)
- Experience administering mixed media networks (10Base2, 100BaseT, 100VG, Token-Ring)

User Experience Research & Design Skills

- Experienced in experimental design and evaluation, having conducted quantitative, qualitative, and mixed-methods studies on subjects ranging between kindergarten children and working professionals, on various technologies such as paper crafts, mobile devices, computer-based intelligent agents, educational touchscreen-based augmented reality, etc.
- Expert knowledge of user-centered design process, through industrial and academic experiences in product design, research design, and teaching assistantships.
- Proficient with quantitative statistical methods, and analysis tools such as SPSS, Matlab, Tableau.
- Expertise in formative and summative studies, requirements elicitation, interviews and survey design, stakeholder involvement, low- and hi-fidelity prototyping, usability studies.
- Hold IRB certification from both Emory University and Georgia Institute of Technology.

Awards (for products, publications, performance)

- 2016 **ACM IDC'16 International Conference on Interaction Design and Children**
Winner of the Design and Research Competition, for the paper "All Creatures Great and Small: Becoming Other Organisms through the EmbodySuit" (authors: I. Radu and A. Antle)
- 2016 **Georgia Institute of Technology**
Outstanding Graduate Teaching Assistant Award Finalist (Institute-Wide)
- 2015 **iKids Awards**
Award Finalist, for the PBS KIDS educational product "Cyberchase Shape Quest"
- 2015 **Webby Awards**
Award Honoree, for the PBS KIDS educational product "Cyberchase Shape Quest"
- 2014 **Webby Awards**
Award Finalist, for the PBS KIDS educational product "Cyberchase Shape Quest"
- 2012 **Georgia Institute of Technology**
GVU James D. Foley Scholar Award Recipient
- 2011 **IEEE ISMAR'11 International Symposium on Mixed and Augmented Reality**
Best Paper Award for the paper "Pre-Patterns for Designing Embodied Interactions in Handheld Augmented Reality Games" (authors: Y. Xu, E. Barba, I. Radu, M. Gandy, R. Shemaka, B. Schrank, B. MacIntyre, and T. Tseng)
- 2008 **Georgia Tech Undergraduate Research in Computing Symposium**
People's Choice Second Prize Winner for the poster "Second Mind: A Wiki Environment for Authoring Virtual Characters." (authors: C. Lacey, I. Radu, M. Mehta)
- 2007 **BC-NET Conference**
People's Choice Prize Winner for the poster "Mobile Agent Service-Oriented Architectures" (authors: I. Radu, S. T. Vuong)
- 2007 **University of British Columbia**
Best Undergraduate Teaching Assistant in Computer Science Award
- 2007 **Canada National Science and Engineering Research Council (NSERC)**
Undergraduate Student Research Award
- 2006 **Canada National Science and Engineering Research Council (NSERC)**
Undergraduate Student Research Award
- 2003 **University of British Columbia**
Undergraduate Scholar Program Scholarship
- 2002 **University of British Columbia**
Undergraduate Scholar Program Scholarship
- 2001 **University of British Columbia**
Undergraduate Scholar Program Scholarship
- 2000 **University of British Columbia**
Undergraduate Scholar Program Scholarship

Conference and Journal Publications

- Radu, Iulian, Blair MacIntyre, and Stella Lourenco. "**Comparing children's crosshair and finger interactions in handheld augmented reality: relationships between usability and child development.**" In *Proceedings of the 15th International Conference on Interaction Design and Children*. ACM, 2016.
- Radu, Iulian, Betsy McCarthy, Yvonne Kao. "**Discovering educational augmented reality math applications by prototyping with elementary-school teachers.**" In *Virtual Reality 2016 Proceedings (VR)*, IEEE, 2016.
- Thompson, Benjamin, Laura Levy, Maribeth Gandy, Amelia Lambeth, David Byrd, Joelle Alcaidinho, Iulian Radu. "**Participatory Design of STEM Education AR Experiences for Heterogeneous Student Groups: Exploring Dimensions of Tangibility, Simulation, and Interaction.**" In *Mixed and Augmented Reality (ISMAR), 2012 IEEE International Symposium on*, IEEE, 2016.
- Radu, Iulian, Ellen Doherty, Kristin DiQuollo, Betsy McCarthy, and Michelle Tiu. "**Cyberchase shape quest: pushing geometry education boundaries with augmented reality.**" In *Proceedings of the 14th International Conference on Interaction Design and Children*, pp. 430-433. ACM, 2015.
- Radu, Iulian. "**Augmented reality in education: a meta-review and cross-media analysis.**" *Journal of Personal and Ubiquitous Computing* 18, no. 6 (2014): 1533-1543.
- McCarthy, Betsy, Yvonne Kao, Iulian Radu, Sara Atienza, Michelle Tiu. "**Iterative Design Process for Building a Successful Augmented Reality (AR) Game**". *Games Learning and Society (GLS) Conference*. Madison, USA. 2014
- Bujak, Keith R., Iulian Radu, Richard Catrambone, Blair Macintyre, Ruby Zheng, and Gary Golubski. "**A psychological perspective on augmented reality in the mathematics classroom.**" *Journal of Computers & Education* 68 (2013): 536-544.
- Radu, Iulian, Yan Xu, and Blair MacIntyre. "**Embodied metaphor elicitation through augmented-reality game design.**" In *Proceedings of the 12th International Conference on Interaction Design and Children*, pp. 412-414. ACM, 2013.
- Radu, Iulian, and Blair MacIntyre. "**Using children's developmental psychology to guide augmented-reality design and usability.**" In *Mixed and Augmented Reality (ISMAR), 2012 IEEE International Symposium on*, pp. 227-236. IEEE, 2012.
- Radu, Iulian. "**Why should my students use AR? A comparative review of the educational impacts of augmented-reality.**" In *Mixed and Augmented Reality (ISMAR), 2012 IEEE International Symposium on*, pp. 313-314. IEEE, 2012.
- Xu, Yan, Evan Barba, Iulian Radu, Maribeth Gandy, Richard Shemaka, Brian Schrank, Blair MacIntyre, and Tsun-Ming Tseng. "**Pre-patterns for designing embodied interactions in handheld augmented reality games.**" In *Mixed and Augmented Reality-Arts, Media, and Humanities (ISMAR-AMH), 2011 IEEE International Symposium On*, pp. 19-28. IEEE, 2011. (Best Paper Award)
- Xu, Yan, Evan Barba, Iulian Radu, Maribeth Gandy, and Blair MacIntyre. "**Chores are fun: Understanding social play in board games for digital tabletop game design.**" In *Think design play: The fifth international conference of the digital research association (DIGRA)*, vol. 16. 2011.
- Yarosh, Svetlana, Iulian Radu, Seth Hunter, and Eric Rosenbaum. "**Examining values: an analysis of nine years of IDC research.**" In *Proceedings of the 10th International Conference on Interaction Design and Children (IDC)*, pp. 136-144. ACM, 2011.

- Song, HaiTao, James Clawson, and Iulian Radu. **"Updating Fitts' Law to Account for Small Targets."** *International Journal of Human-Computer Interaction* 28, no. 7 (2012): 433-444.
- Radu, Iulian, and Blair MacIntyre. **"Augmented-reality scratch: a children's authoring environment for augmented-reality experiences."** In *Proceedings of the 8th International Conference on Interaction Design and Children (IDC)*, pp. 210-213. ACM, 2009.
- Mehta, Manish, Tina Lacey, Iulian Radu, Abhishek Jain, and Ashwin Ram. **"Creating behavior authoring environments for everyday users."** In *International Conference on Computer Games, Multimedia, and Allied Technologies (CGAT), Singapore*. 2009.
- Xu, Yan, Maribeth Gandy, Sami Deen, Brian Schrank, Kim Spreen, Michael Gorbisky, Timothy White, Evan Barba, Iulian Radu, Jay Bolter, Blair MacIntyre. **"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 (ACE)*, pp. 276-283. ACM, 2008.
- Radu, Iulian. **"ThoughtPlay: Studying Cognition Through Augmented-Reality Interaction"**. Design Computation and Cognition Conference. Atlanta, USA. 2008
- Radu, Iulian, Son T. Vuong. **"NEMOS: Mobile-Agent Based Service Architecture for Lightweight Devices"**. International WorldComp Conference: Semantic Web and Web Services. Las Vegas, USA. 2007
- Radu, Iulian. Son T. Vuong. **"Mobile Agent Service-Oriented Architectures"**. BC-NET Conference. Vancouver, Canada. 2007 (*People's Choice Prize Winner*)
- Li, Juan, Iulian Radu, and Son Vuong. **"GODIS: Ontology-Based Resource Discovery and Integration in Grids."** In *Proceedings of the 18th IASTED International Conference: Parallel and Distributed Computing Systems, Dallas, USA*. 2006.

Workshop and Non-Refereed Presentations

- Radu, Iulian, Alissa Antle. **"All Creatures Great and Small: Becoming Other Organisms through the EmbodySuit"**. ACM *International Conference on Interaction Design and Children (IDC'16)*. Manchester, UK. 2016 (Research & Design Competition 1st Prize Winner)
- Radu, Iulian, Alissa Antle, Blair MacIntyre. **"Challenges and Opportunities Toward Using Embodied Cognition in K-12 AR Education"**. IEEE Virtual Reality 2016 (*VR'16*) *Workshop K-12 Embodied Learning Through Virtual and Augmented Reality*. Greenville, NC, USA. 2016
- Radu, Iulian. **"Why should my students use AR? A comparative review of the educational impacts of augmented-reality."** American Society for Engineering Education STEM Expo at Georgia Tech. Atlanta, GA, USA. 2016
- Radu, Iulian, Betsy McCarthy, Yvonne Kao. **"Prototyping Augmented Reality with Elementary Mathematics Teachers"**. ACM *International Conference on Interaction Design and Children (IDC'15) Workshop on Innovations in Interaction Design & Learning*. Boston, USA. 2015
- Yan Xu, Sam Mendenhall, Vu Ha, Iulian Radu, Blair MacIntyre. **"Trade-Offs for Designing Handheld Augmented Reality Game Interfaces"**. ACM Conference on Computer Supported Cooperative Work (CSCW'12) *Workshop on Mixed Reality Games*. Seattle, USA. 2012.
- Radu, Iulian, Keith Bujak, Blair MacIntyre. **"Augmented Reality Games for Education"**. USA Science and Engineering Festival. Washington, DC, USA. 2012.

- Radu, Iulian, Yan Xu, Blair MacIntyre. “Eliciting Embodied Metaphors through Augmented-Reality Game Design”. ACM Conference on Human Factors in Computing Systems (CHI’11) Workshop on Embodied Interaction: Theory and Practice in HCI. Vancouver, Canada. 2011
- Radu, Iulian, Ruby Zheng, Gary Golubsky, Mark Guzdial. “Augmented Reality in the Future of Education”. ACM Conference on Human Factors in Computing Systems (CHI’10) Workshop on UI Technology and Educational Pedagogy. Atlanta, USA. 2010
- Radu, Iulian, and Blair MacIntyre. “AR SPOT: Authoring Augmented-Reality Experiences through Scratch”. Scratch@MIT Conference. Boston, USA. 2010
- Radu, Iulian, and Blair MacIntyre. “Augmented-reality scratch: a children's authoring environment for augmented-reality experiences.” ACM Conference on Human Factors in Computing Systems (CHI’09) Workshop on Tangibles for Children: the Challenges. Boston, USA. 2009.
- Christina Lacey, Iulian Radu, Manish Mehta. “Second Mind: A Wiki Environment for Authoring Virtual Characters.” Undergraduate Research Opportunities in Computing Symposium. Atlanta, USA. 2008 (*People’s Choice Second Prize Winner*)

Volunteer and Organizational Positions

- 2016 **ACM IDC’16 Conference on Interaction Design and Children**
Workshop Organizer, co-organizing and running the “Embodied Cognition, Augmented Reality and K-12 Education” workshop.
- 2016 **IEEE VR’16 Conference on Virtual Reality**
Workshop Organizer, co-organizing and running the “K-12 Embodied Learning Through Virtual and Augmented Reality” workshop.
- 2016 **IEEE VR’16 Conference on Virtual Reality**
Student Volunteer, assisting with conference logistics.
- 2015 **ACM IDC’15 Conference on Interaction Design and Children**
Student Volunteer, assisting with conference logistics.
- 2012 **IEEE ISMAR’12 International Symposium on Mixed and Augmented Reality**
Demo Chair, in charge of coordinating the interactive research demos.
- 2012 **IEEE ISMAR’12 International Symposium on Mixed and Augmented Reality**
Workshop Organizer, running the session on “AR for Children’s Education”.
- 2011 **ACM CHI’11 Conference on Human Factors in Computing Systems**
Student Volunteer, assisting with conference logistics.
- 2008-2013 **The Children’s School of Atlanta, USA :: Computer Technology Lab**
Volunteer, assisting a teacher for activities of Grade 1 and Grade 4 classes, as children learned to use digital technology creating digital images and programming games. I engaged in teaching, managing the classroom, and designing curriculum activities. Children found me to be fun and wacky, and voluntarily used me as character in their games.
- 2005-2007 **British Columbia Children’s Hospital, Canada :: Psychiatry Department**
Volunteer, entertained children 3 to 12 years old while they waited for psychiatrist / family relatives. Individually managed the departmental playroom, organized activities and signage, and interacted with patients, doctors and staff.

2007- **Academic Reviewer for the following Conferences and Journals**
Present ACM Interaction Design and Children conference
ACM Special Interest Group on Computer-Human Interaction conference
ACM Tangible, Embodied and Embedded Interaction conference
IEEE International Symposium on Mixed and Augmented Reality conference
Journal of Artificial Intelligence for Engineering Design, Analysis and Manufacturing
Journal of Computers and Education
Nordic Conference on Human-Computer Interaction

Personal

- Creative thinker, intuitive feeler and efficient problem solver.
- Have successfully managed large team projects composed of diverse experts; also work well independently.
- Enthusiastic about almost everything under the sun, detail oriented, self-motivated, highly adaptive.
- Passionate dancer, extreme snowboarder, nature lover.
- Canadian citizen. Holder of USA F-1 / OPT visa with capability for STEM OPT work authorization.