

Edward F. Melcer

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RESEARCH INTERESTS

Embodiment; educational games and technologies; tangibles; augmented/mixed reality; virtual reality; physical and social co-located play; human-computer interaction; game studies.

EDUCATION

NYU Tandon School of Engineering, Brooklyn, New York

Ph.D. in Computer Science

May, 2018

Masters in Computer Science, GPA: 3.9

Jan, 2016

Specializations: HCI, Educational Game Design, Embodiment

Polytechnic Institute of New York University, Brooklyn, New York

May, 2013

Bachelor of Science in Computer Science, Summa Cum Laude

Specialization: Digital Game Design and Development

GPA: 3.8, Dean's List 2009 - 2013

RESEARCH POSITIONS AND PROJECTS

University of California, Santa Cruz (UCSC)

Santa Cruz, CA

Assistant Professor

July, 2018 – Current

I am currently an assistant professor in the UCSC Department of Computational Media and Games and Playable Media Program. My primary teaching and research interests are at the intersection of games, human-computer interaction, and learning science, exploring the usage of novel interfaces and physical gameplay mechanics to enhance learning outcomes in educational games.

NYU Tandon School of Engineering, Game Innovation Lab

New York, NY

Research Assistant (Advisor: Dr. Katherine Isbister)

Sep, 2011 – May 2018

- *Bots & (Main)Frames* – Developed web and tangible/augmented reality versions of a computational thinking game for dissertation research. Evaluated and compared impacts between mouse and tangibles designs on learning and related factors (i.e., enjoyment, self-beliefs, etc.). The game was a finalist and winner of educational game design competitions such as the Serious Games Showcase & Challenge at I/ITSEC 2016.
- *Meta-analysis of Games Research Field* – Conducted research in collaboration with faculty at NEU on fundamental questions regarding structure of the games research field, what topics and communities are prevalent, how has the field evolved, etc. Received a best paper award in the game studies track of FDG '15 for this work.

UCSC, Social Emotional Technology Lab

Santa Cruz, CA

Visiting Researcher, Lecturer

Jan, 2016 – Dec, 2017

Worked in the Social Emotional Technology Lab on exploring social affordances of play. Helped develop games such as SceneSampler, an official selection at IndieCade 2018. Also created and taught a course at UCSC on the design and fabrication of alternative video game controllers.

eBay Inc. Research Labs

San Jose, CA

Ph.D. Intern Research Scientist

May, 2014 – Aug, 2014

Developed gamified mobile app shopping experiences through scenario building, prototyping, and literature review. The research was to examine the effectiveness of alternative shopping experiences that circumvent information and choice overload common in typical interfaces.

PEER REVIEWED PUBLICATIONS

Erin R. Ottmar, **Edward Melcer**, Dor Abrahamson, Mitchell J. Nathan, Emily Fyfe, and Carmen Smith. (2018). "EMBODIED MATHEMATICAL IMAGINATION AND COGNITION (EMIC) WORKING GROUP". In *North American Chapter of the International Group for the Psychology of Mathematics Education (2018)*.

[Best Paper Honorable Mention]

Edward F. Melcer and Katherine Isbister. (2018). "Bots & (Main)Frames: Exploring the Impact of Tangible Blocks and Collaborative Play in an Educational Programming Game". In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. CHI '18, Montréal, Canada. ACM.

Katherine Isbister, Elena Marquez Segura, and **Edward F. Melcer**. (2018). "Social Affordances at Play: Game Design Toward Socio-Technical Innovation". In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. CHI '18, Montréal, Canada. ACM.

Edward F. Melcer, Michael T. Astolfi, Mason Remaley, Adam Berenzweig, and Tudor Giurgica-Tiron. (2018). "CTRL-Labs: Hand Activity Estimation and Real-time Control from Neuromuscular Signals". In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*. CHI '18, Montréal, Canada. ACM.

Truong-Huy Nguyen, **Edward F. Melcer**, Alessandro Canossa, Magy Seif El-Nasr, and Katherine Isbister. (2017). "Seagull: A Bird's-Eye View of the Evolution of Technical Games Research". ***Accepted, in revision for Journal of Entertainment Computing***.

Edward F. Melcer and Katherine Isbister. (2017). "Embodiment, Collaboration, and Challenge in Educational Programming Games: Exploring Use of Tangibles and Mouse". In *Proceedings of the 12th international conference on the Foundations of Digital Games*. FDG '17, Hyannis, MA. ACM.

Edward F. Melcer and Katherine Isbister. (2017). "Toward Understanding Disciplinary Divides within Games Research". In *Proceedings of the 12th international conference on the Foundations of Digital Games*. FDG '17, Hyannis, MA. ACM.

Edward F. Melcer, Victoria Hollis, and Katherine Isbister. (2017). "Tangibles vs. Mouse in Educational Programming Games: Influences on Enjoyment and Self-Beliefs". In *Extended Abstracts of the 35th Annual ACM Conference on Human Factors in Computing Systems*. CHI '17, Denver, CO. ACM.

Kate Compton, **Edward F. Melcer**, and Michael Mateas. (2017). "Generominos: Ideation Cards for Interactive Generativity". In *Proceedings of the 13th Artificial Intelligence and Interactive Digital Entertainment Conference*. AIIDE '17, Utah. ACM.

Edward F. Melcer and Katherine Isbister. (2016). "Bridging the Physical Learning Divides: A Design Framework For Embodied Learning Games and Simulations". In *Proceedings of the 1st International Joint Conference of DiGRA and FDG*. DiGRA and FDG '16, Dundee, Scotland.

[Best Paper Honorable Mention in Late-Breaking Work Track]

Edward F. Melcer and Katherine Isbister. (2016). "Bridging the Physical Divide: A Design Framework For Embodied Learning Games and Simulations". In *Extended Abstracts of the 34th Annual ACM Conference on Human Factors in Computing Systems*. CHI '16, San Jose, CA. ACM.

Edward F. Melcer and Katherine Isbister. (2016). "Motion, Emotion, and Form: Exploring Affective Dimensions of Shape". In *Extended Abstracts of the 34th Annual ACM Conference on Human Factors in Computing Systems*. CHI '16, San Jose, CA. ACM.

[Best Paper Award in Game Studies Track]

Edward F. Melcer, Truong-Huy Nguyen, Zhengxing Chen, Alessandro Canossa, Magy Seif El-Nasr, and Katherine Isbister. (2015). "Games Research Today: Analyzing the Academic Landscape 2000-2014". In *Proceedings of the 10th international conference on the Foundations of Digital Games*. FDG '15, Pacific Grove, CA.

Oliver L. Haimson, Anne E. Bowser, **Edward F. Melcer**, and Elizabeth F. Churchill. (2015). "Online Inspiration and Exploration for Identity Reinvention". In *Proceedings of 33rd Annual ACM Conference on Human Factors in Computing Systems*. CHI '15, Republic of Korea, Seoul. ACM.

Anne E. Bowser, Oliver L. Haimson, **Edward F. Melcer**, and Elizabeth F. Churchill. (2015). "On Vintage Values: The Experience of Secondhand Fashion Reacquisition". In *Proceedings of 33rd Annual ACM Conference on Human Factors in Computing Systems*. CHI '15, Republic of Korea, Seoul. ACM.

Edward F. Melcer and Katherine Isbister. (2014). "Emotional space: understanding affective spatial dimensions of constructed embodied shapes". In *Proceedings of the 2nd ACM symposium on Spatial user interaction*. SUI '14, Honolulu, HI. ACM.

Karlesky, M., **Edward F. Melcer**, and Katherine Isbister. (2013). "Open sesame: re-envisioning the design of a gesture-based access control system". In *Extended Abstracts of 31st Annual ACM Conference on Human Factors in Computing Systems*. CHI'13, Paris, France. ACM.

DOCTORAL CONSORTIUMS

Edward F. Melcer. (2017). "Exploring the Effects of Physical Embodiment in a Puzzle-Based Educational Programming Game". In *Proceedings of the 11th ACM SIGCHI Conference on Creativity and Cognition*. C&C '17, Singapore. ACM.

Edward F. Melcer. (2017). "Moving to Learn: Exploring the Impact of Physical Embodiment in Educational Programming Games". In *Extended Abstracts of the 35th Annual ACM Conference on Human Factors in Computing Systems*. CHI '17, Denver, CO. ACM.

GAME DEMONSTRATIONS AND PRESENTATIONS

IndieCade Festival – SceneSampler	October, 2017
Come Out & Play Festival – SceneSampler	July, 2017
Serious Games Showcase & Challenge – Bots & (Main)Frames	December, 2016
IndieCade East Festival – Veterinarian's Hospital: Ruff Day	May, 2016
Come Out & Play Festival – Veterinarian's Hospital: Ruff Day	July, 2015
NYU Engineering Research Expo – Carb Crush and Bots & (Main)Frames	April, 2015
World Science Festival (Innovation Arcade) – Boulderdash	June, 2013

CHI 2012 (Interactivity) – Scoop!	May, 2012
World Science Festival (Innovation Arcade) – Scoop!	June, 2012
9th Annual Games for Change Festival (G4LI Game Play Expo) – Scoop!	June, 2012

TEACHING POSITIONS

Lecturer in Computational Media—University of California, Santa Cruz Santa Cruz, CA
CMPM 179: Game Design Practicum (Alternative Controller) April, 2017 – June, 2017

Designed and taught an upper level undergraduate special topics course at UCSC on the theory, design, and creation of alternative video game controllers. Course is project based with the goal of having students create a submission/festival ready alternative controller game.

Teaching Assistant—NYU Tandon School of Engineering New York, NY
TA for CS1114, CS1124, and CS9223 Sept, 2015 – May, 2016

Handled office hours, grading, and course logistics for undergraduate Introduction to Programming Methodology (CS1114), Introduction to Object Oriented Programming & C++ (CS1124), and graduate Introduction to Artificial Intelligence in Games (CS 9223).

Playable Fashion Weekend Workshop New York, NY
Instructor Jan, 2014

Introduced middle school students in Staten Island, Queens, and Bronx to the concept of playable fashion at the crossroads of video games, technology, and fashion design. Taught students how to embed sensors into clothing and program video games using sensor input.

CrEST (Creativity in Engineering, Science and Technology) Program New York, NY
Instructor Dec, 2012 - Aug, 2013

Taught New York City high school students computer science, physical computing, mechanical systems and STEM concepts. Involved lecturing, writing curriculum, running labs, building projects with students, and creating demonstrations.

Polytechnic Tutoring Center New York, NY
Computer Science Tutor, Team Leader Sep, 2010 - May, 2013

Tutored students with learning material in C++ and Python. Leader of the computer science tutoring team from Sep, 2011 – May, 2013. Organized development of preparatory mock examinations between professors and tutors.

INDUSTRIAL POSITIONS

CTRL-Labs New York, NY
HCI Fellow July, 2017 - Current

Evaluated usability of brain-machine interface (BMI) and compared to efficacy of other control/pointing devices (e.g., mouse, trackpad, and gamepad). Created engaging user interactions, experiences, and games for the BMI band interface. Developed creative coding library for rapid prototyping and iteration of user experiences with BMI interface.

Gigantic Mechanic Brooklyn, NY
Game Design and Development Internship May, 2015 - Aug, 2015

Designed play oriented physical games for children age 4-6. Developed prototypes and playtested various digital games including experimental 3D soundscape interactions.

Lockheed Martin Global Training and Logistics

Orlando, FL

Software Engineering Internship, Project Lead

May, 2011/2012 - Aug, 2011/2012

Developed user interfaces, software and scripts for the Advanced Gunnery Training System. Lead development team in creation of "LM Maps" facility mapping software. Tested diagnostic instruments and automated test equipment for the LM-STAR vehicle diagnostic hardware.

WORKSHOPS

Edward F. Melcer, and Katherine Isbister. (2016). "Bridging the Physical Divide: A Design Framework for Embodied Learning Systems". Moved to Be Moved Workshop. CHI '16, San Jose, CA, USA. N.p.

Edward F. Melcer, and Katherine Isbister. (2014). "CSEI: The Constructive Sensual Evaluation Instrument". *Workshop on Tactile User Experience Evaluation Methods*. CHI 2014, Toronto, ON, Canada. N.p.

HONORS AND AWARDS

Best Paper Honorable Mention, Bots & (Main)Frames: Exploring the Impact of Tangible Blocks and Collaborative Play in an Educational Programming Game, CHI 2018

Best Student Game Award, Bots & (Main)Frames at Serious Games Showcase & Challenge, I/ITSEC 2016

Best Paper Honorable Mention in LBW Category, Bridging the Physical Divide, CHI 2016

Best Paper, Games Research Today: Analyzing the Academic Landscape 2000-2014, FDG 2015

Provost Fellowship, NYU Polytechnic School of Engineering, 2013

PIAA Outstanding Graduate Award, Polytechnic Institute of NYU, 2013

Pearl Brownstein Senior Award, Polytechnic Institute of NYU, 2013

John J. Dropkin Memorial Award, Polytechnic Tutoring Center, 2013

Finalist, Games for Learning (G4LI) Design Competition, 2011

TECHNICAL SKILLS

Languages: C/C++, C#/Java, Python, Javascript/Actionscript

Engines, Frameworks, & Libraries: Unity, Processing, Arduino, Cinder/OpenFrameworks, Kinect/XNA, Flash

PROFESSIONAL AFFILIATIONS

Member of Association for Computing Machinery, 2011 – Current

Member of SIGCSE, 2011 – Current

Member of SIGCHI, 2012 – Current

Member of New York Academy of Sciences, 2014 – 2018