

# Maria Hwang

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## Research Interests

Computer Science in Undergraduate Education; Educational and Health Games; Gamified Ubiquitous Learning; Multimodal Learning Analytics; Machine Learning; Human Computer Interaction; Data-Driven, User-Centered Design; Tailored and Persuasive Interventions; Self-Monitoring and Management Apps for Chronic Diseases.

## Current Position

Aug 2018 – **Assistant Professor of Computer Science (Tenure Track)**, *Fashion Institute of Technology (FIT)*, New York, NY.

Courses: Programming and Mobile Apps; Statistics, Machine Learning, and Data Mining; Statistical Analysis; Basic Mathematics; and Gaming and E-sports Industry Essentials (*online only*).

Aug 2018 – **Mentor & Advisor**, *Student Project Advising*, Fashion Institute of Technology (FIT), New York, NY.

Adiel Hernandez, Samantha Olinsky, Joyce Ishikawa, Muskaan Arora, Sofia Simoniello, Alison Tyler, Justin Reynoso, Katharine Dorny, Amy Zheng, Zhenaya Albertina, Cigdem Yilmaz, Shivani Dedhia, Annette Pramono, Arryiana Gordon, Cristina Mazzeo, Ashley Tapia, Heather Holewinski, Youseon Jang.

## Education

2011 – 2016 **Instructional Technology and Media, Ed.D.**, *Teachers College, Columbia University*, New York, NY, *Dissertation: Effectiveness of Message Framing in a Digital Game Environment*.

Advisor: Dr. Charles Kinzer

2009 – 2011 **Cognitive Studies in Education, M.A.**, *Teachers College, Columbia University*, New York, NY.

Advisor: Dr. John Black

2004 – 2008 **Neuroscience and Behavior, B.A. & East Asian Studies, B.A.**, *Wesleyan University*, Middletown, CT.

Advisor: Dr. Ellen Widmer

## Professional Experience

Aug 2016 – **Postdoctoral Research Fellow**, *Columbia University Medical Center, Biomedical Informatics*, New York, NY.

Conducted research in the areas of human computer interaction, game-based motivational strategies, ubiquitous learning, persuasive health interventions, and diabetes education; Advised students – Chantes, Pantiphar (2018, EdD), Chau, Michelle (PhD, 2021); Sin, Margaret (MA, 2018); Mao, Yishen (MA, 2018), Lee, Brian (BS, 2017); Jae, Yeonjae (BS, 2021); Kim, Dongwon (BA, 2021); Paek, Kichan (BS, 2020).

Feb 2017 – **Co-Founder & Head of Design**, *World Scholars LLC*, New Haven, CT.

Present Founded an international educational exchange company to provide inclusive, thought-provoking, liberal arts educational experience for students.

- Nov 2015 – **Visiting Faculty**, *Geumgang University*, Nonsan, South Korea.
- Aug 2016 Taught 2 courses in a mix of Korean & English; Intro to Game Design & Web Design; Formulated strategic plans for the new Information Science dept by curriculum planning, and developing interdisciplinary studies.
- Mar 2013 – **Lead Research Assistant**, *Games for Learning Institute; TC Games Research Lab:*  
 May 2016 *Columbia U.*, New York, NY.  
 Worked with Prof. Charles Kinzer and Prof. Joey Lee on designing and evaluating game-based educational tools and applications; Monitored the progress of all research assistants' work; Mentored graduate students.
- Oct 2013 – **Instructional Technology Integrator**, *The Abraham Joshua Heschel School*, New York, NY.  
 Dec 2015  
 Provided technology support for teachers and IT staff as the liaison between the two groups; Taught 9th graders Tech101 on technology tools as well as initiated discussions on 21st century issues such as cyber attacks, privacy, cloud computing, media literacy, & technology consumption vs. creation.
- Sep 2013 – **Teaching Assistant for the Doctoral Colloquium**, *Math, Science, and Technology Dept.*, *Columbia U.*, New York, NY.  
 May 2014  
 Planned and coordinated the doctoral colloquium curriculum and invited guest speakers; Led and facilitated discussions and conversations among doctoral students on current issues in educational technology.
- Feb 2012 – **Lead Math Teacher & Assistant Technology Teacher**, *The Lang School*, New York, NY.  
 Dec 2012  
 Taught kindergarten through middle school students (K-8) in mathematics and technology; Lesson-planned and coordinated technology-infused math and engineering instruction with co-teachers using programs such as Scratch, Greenfoot, Google SketchUp, Moodle, Alice, & LEGO Mindstorms.
- Feb 2011 – **Student Teacher & Substitute Teacher**, *The Green School*, Brooklyn, NY.  
 Dec 2012 Taught high school students (9-12) primarily in mathematics; Lesson-planned and coordinated instruction with co-teachers to focus on preparing students to achieve grade-level proficiency and meet Common Core standards for the Regents; Participated in math departmental meetings to manage instruction across grades.
- Sep 2010 – **Research Intern**, *Center for Technology and School Change*, *Columbia U.*, New York, NY.  
 May 2011  
 Created a professional development plan and technology-infused course design for NYC high school teachers.

## Publications & Presentations

Hoffman, D., Santolucito, M., **Hwang, M.** & Paek, S. (2021). 'Tangible Datasets? What, Why, & How.' *The Association for Educational Communications & Technology (AECT)*.

**Hwang, M.** (2021). Summer Data Salon: Where Data Science and Fashion Meet. Special Interest Group in Computer Science Education (SIGCSE).

**Hwang, M.** & Santolucito, M (2021). cardComposer: A Functional Programming Card Game. ITiCSE. 26th Annual Conference on Innovation and Technology in Computer Science Education.

Olinsky, S., Desai, P., Heitkemper, E., Turkay, S., Mitchell, E., Mamykina, L., & **Hwang, M.** (2021). Meals for Monsters: A Mobile Application for Nutritional Engagement. In *Late Breaking Work of the ACM CHI conference on Human Factors in Computing Systems* (CHI 2021), Yokohama, Japan.

Mitchell, E., Burgermaster, M., Heitkemper, E., Levine, M., Yishen, M., **Hwang, M.**, Desai, P., Casells, A., Tobin, J., Tabak, E., Smaldone, A., Albers, D., & Mamykina, L. (2021). From Reflection to Action: Perceptions of a Machine Learning-Based System for Nutrition Goal Recommendations in Chronic Disease Self-Management. In *Proceedings of the ACM CHI conference on Human Factors*

in *Computing Systems* (CHI 2021), Yokohama, Japan.

Hoffman, D., Paek, S., Santolucito, M., & **Hwang, M.** (2021). Data Tools for Educators: Studying Practitioners' Reactions to Data-Driven Student Groupings Suggested by Machine Learning. In the extended abstract of the *American Educational Research Association* (AERA).

**Hwang, M.**, & Williamson, C. (2020). Using Cloud Tools for Literate Programming to Redesign an AI course for Non-traditional College Students. *The Tenth Symposium on Educational Advances in Artificial Intelligence (EAAI)* in the 34th Association for the Advancement of Artificial Intelligence (AAAI) Conference.

Hoffman, D., Santolucito, M., **Hwang, M.** & Paek, S. (2019). Lessons in Combining Discrete and Continuous Assessment Data: Activity Trackers, Standardized Tests, and Test Anxiety. *The Association for Educational Communications & Technology* (AECT).

Mitchell, E., Burgermaster, M., Heitkemper, E., Levine, M., Miao, Y., Desai, P., **Hwang, M.**, Albers, D., Smaldone, A., & Mamykina, L. (2019, May). Personalized, data-driven recommendations for diabetes self-management with GlucoGoalie. In the *Extended Abstracts of the ACM CHI Conference on Human Factors in Computing Systems* (WISH 2019), Glasgow, UK.

Desai, P., Mitchell, E., **Hwang, M.**, Levine, M., Albers, D., & Mamykina, L. (2019, May). Personal Health Oracle: Explorations of Personalized Predictions in Diabetes Self-Management. In *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems* (CHI 2019), Glasgow, UK.

**Hwang, M.**, & Mamykina, L. (2018, Aug). Let Me Help You Learn from My Meal: User-Generated Meal Photos as a Benchmark for Nutritional Estimation. In the Extended Abstract of the *Connected Learning Summit* (CLS 2018). Boston, MA.

**Hwang, M.** & Mamykina, L. (2017, May). Monster Appetite: Effects of Subversive Framing on Nutritional Choices in a Digital Game Environment. In *Proceedings of the ACM CHI conference on Human Factors in Computing Systems* (CHI 2017), Denver, CO.

**Hwang, M.** & Mamykina, L. (2017, April). Monster Appetite: Effects of Message Framing on Nutritional Choices in a Digital Game Environment. In the Extended Abstract of *Annals of Behavioral Medicine*, San Diego, CA, (pp. S1519-S1520). Springer Press.

**Hwang, M.** (2016, April). Game based teaching for youth health: Testing a board game, Monster Appetite, for classroom implementation. *Proceedings of the American Educational Research Association* (AERA), Washington, D.C.

Kinzer, C., **Hwang, M.**, Chantes, P., Choi, A., & Hsu, S. (2015, July). Educational games: Insights for acceptance. In A. Ochsner,...C. Steinkueler (Eds.), in *Proceedings of Games+Learning+Society* (GLS). Madison, WI, ETC Press.

Santolucito, M. & **Hwang, M.** (2014, Aug). Communalizing the interfaces of single player games. In the Extended Abstract of the 7th *Digital Games Research Association* (DiGRA). Salt Lake City, UT.

**Hwang, M.**, Chantes, P., & Santolucito, M. (2014, June). Raid the fridge!: Promoting healthy eating habits through the game Monster Appetite. In A. Ochsner,...C. Steinkueler (Eds.), in *Proceedings of Games+Learning+Society* (GLS). Madison, WI, (pp. 472-474). ETC Press.

Turkay, S., Hoffman, D., **Hwang, M.**, Chantes, P., Kinzer, C.,...Hsu, S. (2014, June). No hands needed: Investigating the affordances of using a Brain Computer Interface (BCI) as a game controller and its potential effect on learning and user experience. In A. Ochsner,...C. Steinkueler (Eds.), in *Proceedings of Games+Learning+Society (GLS)*. Madison, WI, (pp. 235-241). ETC Press.

**Hwang, M.**,...de Luna, C. (2014, June). Play it with your mind: Investigating the affordances of using a Brain Computer Interface (BCI) as a game controller and its potential effect on learning and user experience. In *Proceedings of Teachers College Educational Technology Conference (TCETC)*. New York, NY.

**Hwang, M.**, Chantes, P., Tedaldi, G., & Lomboy, A. (2014, Jan). Monster Appetite: To eat or not to eat, that is the question. In R. Duncan, J. Bisz, F. Crocco, C. Hernandez, K. Offenholly,...M. Smalle. (Eds.). *Proceedings of the 1st Annual CUNY Games Festival*. New York, NY, (p. 23).

**Hwang, M.** (2013). Assessment of "Tale of the Tape." In N. Fletcher, A. Velamur, B. Waid, & A. Dimacali, (Eds.), *Mathematical modeling handbook II: The assessments*. Bedford, MA: COMAP.

**Hwang, M.**, & Chantes, P. (2013, June). Monster Appetite: A board game targeting one nutritional aspect with one funky game mechanic. Presentation at the 9th *Annual Games for Health (G4H)*. Boston, MA.

**Hwang, M.**, Chantes, P., Tedaldi, G., & Lomboy, A. (2013, March). Promoting healthy eating habits through Monster Appetite. In L. Gómez Chova, A. López Martínez, & I. Candel Torres (Eds.). In *Proceedings of the 7th annual International Technology, Education, and Development Conference (INTED)*, Valencia, Spain, (p. 2211).

**Hwang, M.**, Chantes, P., Tedaldi, G., & Lomboy, A. (2012, May). Promoting Healthy Eating Habits through Monster Appetite. In *Proceedings of the Teachers College Educational Technology Conference (TCETC)*, p. 24). New York, NY.



## Manuscripts in Preparation

Harmon, S., Heitkemper, E., Mamykina, L., & **Hwang, M.** (2022). Applying an Old Proverb Towards New Paradigms: Supporting Macronutrient Assessment Skills in a Digital Intervention. In *Proceedings of the ACM CHI conference on Human Factors in Computing Systems (CHI 2022)*.

Santolucito, M., Hoffman, D., Paek, S., & **Hwang, M.** (2022). An Automated Tool for Educators in Forming Student Groups Using Multimodal Learning Analytics (MMLA). In *Proceedings of the ACM CHI conference on Human Factors in Computing Systems (CHI 2022)*.



## Awards & Honors

2021–2023 **National Science Foundation (NSF)**, *Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII)*.

A Crowdsourced Social Computing Platform with Gamification Mechanisms for Healthy Eating. Awarded amount: \$175,000

2021 **Envisioning the Future of Computing in Undergraduate Education, Innovative CUE Ideas Award (CUE.NEXT Workshops)**.

Arts and Computing in NYC. Awarded amount: \$12,000

- 2020 **Team Flash: Adobe Analytics Challenge 2020**, *Adobe Analytics Challenge*.  
A competition hosted by Adobe using their Adobe Analytics platform to analyze Nike sales data. Faculty advisor to an FIT student team and helped them enter the six finalists out of the original 1600 teams, and win third place. Awarded amount: \$6000
- 2020 **SIGCSE: Special Interest Group Computer Science Education**, *Grant from the School of Liberal Arts*.  
Grant funding provided for faculty in the School of Liberal Arts at FIT. Awarded amount: \$211.93
- 2020 **SIGCSE: Special Interest Group Computer Science Education**, *The Faculty Development Grants and Awards (FDGA)*.  
Grant funding provided for faculty at Fashion Institute of Technology (FIT). Awarded amount: \$722
- 2019 **Research for Monster Appetite through the lens of women**, *Office on Women's Health (OWH) Challenge, Dept of Health & Human Services*.  
Grant funding provided for applicants who passed Phase 1 and 2 of the Shape of Health - An Obesity Prevention Game Competition. Won second place in the entire competition. Awarded amount: \$12,000
- 2019 **Research for Feed Avatar Together**, *The Faculty Development Grants and Awards (FDGA)*.  
Grant funding provided for faculty at Fashion Institute of Technology (FIT). Awarded amount: \$1,000
- 2019 **ACM CHI 2019 Conference on Human Factors in Computing Systems**, *Grant from the School of Liberal Arts*.  
Grant funding provided for faculty in the School of Liberal Arts at FIT. Awarded amount: \$400 – need to check
- 2019 **ACM CHI 2019 Conference on Human Factors in Computing Systems**, *The Faculty Development Grants and Awards (FDGA)*.  
Grant funding provided for faculty at Fashion Institute of Technology (FIT). Awarded amount: \$1,500
- 2017 **Games and Learning Early Career Workshop at Games for Change (G4C)**, *Games and Learning Early Career Award* .  
An invitation and funding to attend the 14th G4H festival and Early Career Workshop.
- 2017 **Early Career Development Symposium at ACM CHI 2017 Conference**, *Early Career Development Symposium Award* .  
An invitation and funding to attend the 2nd CHI Early Career Development Symposium.
- 2016 **Columbia University**, *Doctoral Dissertation Grant*.  
Dissertation funding support provided by Doctoral Application for Grant-In-Aid Funding at Columbia.
- 2015, 2016 **Columbia University**, *TC International Scholarship*.  
Stipend provided for doctoral students at Columbia.
- 2014, 2016 **Columbia University**, *Louis Gerstner Fund Scholarship*.  
Stipend provided for doctoral students at Columbia.
- April 2015 **Columbia University**, *Finalist for Academic Festival Student Research Poster Conference*.  
Awarded to students who, in the eyes of Teachers College, has conducted the best research in their respective departments.
- June 2014 **10th Annual Games+Learning+Society Conference (GLS)**, *Best of Show Poster Award*.  
Awarded to the best team/individual with the poster that received the most votes from conference attendees on the day of the poster presentation.
- 2011–2013 **Columbia University**, *TC General Scholarship*.  
Scholarship provided for master and doctoral students at Columbia.

- Multiple **Various, Travel Funding.**  
Travel Grants for attending conferences INTED 2013, G4H 2013, GLS 2013, DiGRA 2014, GLS 2014, SIGCHI 2017, G4C 2017, SIGCHI 2018, SIGCHI 2019.
- 2012 **Columbia University, Innovative Mobile Tech for Development Competition First Prize.**  
Awarded to the best team that received the most points from a panel of judges selected by the New Media Task Force at the School of International and Public Affairs, Columbia.

## Invited Talks

- March 2021 **SIGCSE: Special Interest Group Computer Science Education, Virtual.**  
Innovations and Opportunities in Liberal Arts Computing Education: CS+X Courses
- April 2020 **Design with Emerging Materials, Fashion Institute of Technology, New York., NY.**  
Wearables in the World of Research and Experimentation
- March 2020 **SIGCSE: Special Interest Group Computer Science Education, Portland, OR.**  
Liberal Arts Computing Curricula: Innovations, Challenges, and Opportunities
- Feb 2020 **13th Annual American College Counseling Association Conference, Washington DC.**  
OnlineHaters: A Pilot Treatment Approach for Cyberbullies Using VR
- Dec 2019 **CUE.NEXT Workshop, Washington DC.**  
"Computing in Undergraduate Education" (Panelist)
- Nov 2019 **Office on Women's Health (OWH), Washington DC.**  
"Monster Appetite through the Lens of Women"
- Mar 2019 **Retail Marketing Society, New York, NY.**  
"How AI and Machine Learning is Changing the Fashion Industry"
- Aug 2017 **Summer Program with Culture Vision Education Inc., Woodbridge, CT.**  
"Iterative Design in Game Design Research"
- June 2016 **Geumgang University, Nonsan, South Korea.**  
Commencement speech: "What is an Alma Mater?"

## Service

### **FIT Member Representative – Academic Alliance**

National Center for Women & Information Technology (NCWIT, 2020 – Present);

### **Organizing Committee Member – the AAAI Undergraduate Consortium**

Association for the Advancement of Artificial Intelligence (AAAI, 2020 – Present);

### **IARIA Committee Member – the Technical Program Committee (TPC)**

The International Academy, Research and Industry Association (IARIA, 2020 – Present);

### **Reviewer – Conferences and Journals**

- Advances in Computer-Human Interactions (ACHI);
- Games+Learning+Society (GLS);
- ACM Conference on Human Factors in Computing Systems (SIGCHI);
- ACM SIGGRAPH;
- Connected Learning Summit (CLS);
- American Educational Research Association (AERA);
- Health Informatics Journal;
- European Journal of Pediatrics;
- PLOS ONE;

## **Institutional Service for Fashion Institute of Technology**

- Research Cohort Team (Advisor: Summer, 2020 – Present)
- Flexible Learning Committee (Co-Chair: Fall, 2020 – Present);
- Adobe Analytics Challenge (Faculty advisor for the FIT team Flash: Fall, 2020);
- Summer Data Salon (Providing a non-credit bearing programming and data focused research lab course for undergrads and master students: Summer, 2020);
- Course Coordinator for the Math Department (Summer, 2020 – Present);
- Computational Music with Dan Tepfer (Presenter: Fall, 2020);
- Design with Emerging Materials (Guest Lecturer: April, 2020);
- Hackathon, Bermuda (Keynote speaker: Dec, 2018; Session leader: Dec, 2019 / featured in Bermuda Royale Gazette and FIT News);
- Programming Digital Embroidery workshops (Workshop host: Oct & Nov, 2019);
- Academic Open Mic (Presenter: Nov, 2019; Mar, 2020);
- LG Global Challenge on Ethical Artificial Intelligence (Interviewee & Consultant: Summer, 2019);
- Gladys Marcus Award Interview (Interviewer: April, 2019);
- Computer Science Fair (Represented FIT as one of the non-profit higher educational leaders: April, 2019; Oct);
- Retail Marketing Society Talk (Keynote Presenter: Mar, 2019);
- Flexible Learning Think Tank (Co-Chair: Spring, 2019 – Summer 2020);
- Interviewed for the annual report through the Communications and External Relations (CER, Spring 2019; Fall 2020);
- Emerging Technologies Committee (Committee Member: Fall, 2018 – Present);
- Internal Review Board (Committee Reviewer: Fall, 2018 – Present);