FANNIE LIU

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education

2015 - 2020

Ph.D. & M.S. in Human-Computer Interaction
Carnegie Mellon University, School of Computer Science, Pittsburgh, PA

Ph.D. Thesis: *Fostering Social Connection through Expressive Biosignals*
Committee: Laura Dabbish (co-chair), Geoff Kaufman (co-chair), Mayank Goel, John Tang

2009 - 2014

M.S.E. in Computer Graphics and Game Technology
B.S.E. in Digital Media Design
University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA

Advisors: Norman Badler, Stephen Lane

experience

2023 - present

Vice President Applied Research Lead, JPMorgan Chase & Co.
Global Technology Applied Research, New York, NY

- Conducting research on AR/VR in the workplace

Fall 2022

Associate Research Scholar, Princeton HCI
Princeton University, Department of Computer Science, Princeton, NJ

- Led research on social programming experiences in AR for children

2020 - 2022

Research Scientist, Snap Inc.
HCI Research Team, New York, NY

- Led research involving teams of research scientists, engineers, designers, and product managers on novel technologies that promote self-expression and social presence
- Conducted research on digital handcrafting in AR *[c1]*, understanding AR activism *[c3]*, and disability representation in avatars *[in submission]*, eliciting design recommendations for AR and avatar platforms such as Lens Studio and Bitmoji
- Presented findings and design insights to the CTO, product teams, and the academic community
- Mentored and collaborated with Ph.D. interns from interdisciplinary backgrounds, and academic research teams studying co-located social AR *[c2, w1]*
- Provided internal consultancy to research and product teams for user research best practices

2015 - 2020

Researcher, Human-Computer Interaction Institute
Carnegie Mellon University, School of Computer Science, Pittsburgh, PA

- Designed, developed, and studied novel communication technologies that foster social connection through the display of biosignal data that convey emotional experiences *[c4-c9, d1, w2, w3]*

2018 - 2020

Research Intern, Snap Inc.
HCI Research Team, Seattle, WA, Mentor: Andrés Monroy-Hernández

- Designed and developed Significant Otter, an Apple Watch app that enables romantic couples to share biosignals-driven playful avatars with each other. Featured on the Apple app store, Apple retail stores, and Product Hunt, with more than 60,000 installations *[Summer 2019-Spring 2020]*
- Designed and developed Animo, a Fitbit Versa app that enables heart rate sharing with close others *[Summer 2018]*
- Conducted field studies with couples who used Significant Otter *[c4]* and Animo *[c6]*, showing that smartwatch communication with biosignals can enhance authentic social connection and presence

2014 - 2015

Software Engineer, LinkedIn
Content Ingestion Team, New York, NY

- Developed backend infrastructure for ingesting content from third party websites within LinkedIn
- Supported over 300 million LinkedIn users through content shared on the news feed, user profiles, and the Pulse application

publications

conference
proceedings

c1. Zhang, L., Chen, T., Seow, O., Chong, T., Kratz, S., Tham, Y.J., Monroy-Hernández, A., Vaish, R. & **Liu, F.** (2022). Auggie: Encouraging Effortful Communication through Handcrafted Digital Experiences. To appear in *Proceedings of the ACM on Human-Computer Interaction (CSCW 2022)*. **Best Paper Award (top 1% of submissions)**.

c2. Epstein, D., **Liu, F.**, Monroy-Hernández, A., & Wang, D. (2022). Revisiting Piggyback Prototyping: Examining Benefits and Tradeoffs in Extending Existing Social Computing Systems To appear in *Proceedings of the ACM on Human-Computer Interaction (CSCW 2022)*.

c3. Silva, R. M.L., Cruz, E. P., Rosner, D.K., Kelly, D., Monroy-Hernández, A., & **Liu, F.** (2022). Understanding AR Activism: An Interview Study with Creators of Augmented Reality Experiences for Social Change. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2022)*.

c4. **Liu, F.**, Park, C., Tham, Y., Tsai, T., Dabbish, L., Kaufman, G., & Monroy-Hernández, A. (2021). Significant Otter: Understanding the Role of Biosignals in Communication. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2021)*. **Best Paper Honorable Mention (top 5% of submissions)**.

c5. **Liu, F.**, Kaufman, G., & Dabbish, L. (2019). The Effect of Expressive Biosignals on Empathy and Closeness for a Stigmatized Group Member. *Proceedings of the ACM on Human-Computer Interaction (CSCW 2019)*. 3, 201.

c6. **Liu, F.**, Esparza, M., Pavlovskaia, M., Kaufman, G., Dabbish, L., & Monroy-Hernández, A. (2019). Animo: Sharing Biosignals on a Smartwatch for Lightweight Social Connection. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (UbiComp 2019)*. 3(1),18.

c7. **Liu, F.**, Dabbish, L., & Kaufman, G. (2017). Can Biosignals be Expressive? How Visualizations Affect Impression Formation from Shared Brain Activity. *Proceedings of the ACM on Human-Computer Interaction (CSCW 2018)*. 1, 71.

c8. **Liu, F.**, Ford, D., Parnin, C. & Dabbish, L. (2017). Selfies as Social Movements: Influences on Participation and Perceived Impact on Stereotypes. *Proceedings of the ACM on Human-Computer Interaction (CSCW 2018)*. 1, 72.

c9. **Liu, F.**, Dabbish, L., & Kaufman, G. (2017). Supporting Social Interactions with an Expressive Heart Rate Sharing Application. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (UbiComp 2017)*, 1(3), 77.

c10. Normoyle, A., **Liu, F.**, Kapadia, M., Badler, N. I., & Jörg, S. (2013). The effect of posture and dynamics on the perception of emotion. *Proceedings of the ACM Symposium on Applied Perception (SAP 2013)*, (pp. 91-98). ACM.

doctoral
symposium

d1. **Liu, F.** (2019). Expressive Biosignals: Authentic Social Cues for Social Connection. *Proceedings of the ACM CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI 2019 Doctoral Consortium)*.

workshop
papers

w1. Mahajan, S., McDonald, D.Q., Vallet, R., **Liu, F.**, Smith, G., & Solovey, E.T. (2022). Concept Design for Family Well-being with Knitted Touch Sensors and Augmented Reality. In *Workshop on Tangible Interaction for Supporting Well-being (CHI 2022 Workshop)*.

w2. **Liu, F.**, Dabbish, L., & Kaufman, G. (2018). Biosignals-Driven Expressivity in Virtual Reality Avatars. In *Workshop on Novel Interaction Techniques for Collaboration in VR (CHI 2018 Workshop)*.

w3. **Liu, F.**, Kaufman, G., & Dabbish, L. (2016). Design Considerations for Expressive Biofeedback in Social Interactions. In *Workshop on Collocated Interaction: New Challenges in 'Same Time, Same Place' Research (CSCW 2016 Workshop)*.

skills

Methods

Interviews, Surveys, Prototyping, Field Studies, Experimental Design, Usability Tests, Contextual Inquiry, Participatory Design, Storyboarding, Design Sprint, Game Design, Data Visualization

Programming

Python, Java, JavaScript, HTML, CSS

Software

Adobe Creative Suite, Figma, Sketch, Unity, Autodesk Maya, SPSS, Atlas.ti, NVivo

teaching

2020

Teaching Assistant, 05-410/05-610: User-Centered Research & Evaluation
Carnegie Mellon University, School of Computer Science, Pittsburgh, PA

Led a recitation of 18 students, created section lectures, held office hours, and graded assignments.

2016 - 2019

Research Advisor, Human-Computer Interaction Institute
Carnegie Mellon University, School of Computer Science, Pittsburgh, PA

Advised 24 Masters and undergraduate students (including majors in Computer Science, Design, Art, Architecture, and Cognitive Science) on projects for understanding and designing systems that integrate biosignals into social contexts, including mobile applications, visualizations, desktop chat systems, and interactive virtual reality experiences.

2018

Teaching Assistant, 05-430/05-630: Programming Usable Interfaces
Carnegie Mellon University, School of Computer Science, Pittsburgh, PA

Led a lab section of 44 students, created lab lessons and homework assignments, held office hours, and graded assignments and exams.

2014

Teaching Assistant, CIS660: Advanced Computer Graphics
University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA

Graded assignments and held office hours.

2011 - 2014

Head Teaching Assistant, CIS110: Introduction to Computer Programming
University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA

Managed and assigned duties to TAs, planned staff meetings, organized TA training and retreat. Led a lab section of 20 students, held office hours, graded assignments and exams.

services

2017 - present	Reviewer: CHI, CSCW, DIS, IMWUT, UIST, PLOS ONE, TEI
2018 - 2019	Women@SCS: PhD Board Member, Grad/Undergrad Mentoring Event Organizer
2018	Student Volunteer: CSCW (SV t-shirt competition winner)
2016 - 2020	Webmaster: eheart lab

honors

2019	Grace Hopper Celebration Student Scholarship
2018	CMU Center for Machine Learning and Health Fellowship in Digital Health
2017	Snap Research Fellowship Honorable Mention
2017	CMU Presidential Fellowship
2016, 2017	NSF GRFP Fellowship Honorable Mention

invited talks

2022

Princeton HCI Seminar, Princeton University
"Fostering Social Connection over Technology"

2020

UX Industry Seminar, Birmingham City University
"Fostering Social Connection over Technology"

2019

Digital Media: Telepresence, Empathy, and Spatial Immersion class, Harvard University
"Fostering Social Connection through Expressive Biosignals"

2019

Center for Machine Learning and Health Fellow Day, Carnegie Mellon University
"Leveraging physiological data to promote social connection for positive well-being"

2019

DUB Seminar, University of Washington
"Expressive Biosignals: Lightweight Cues for Social Connection"

2019

Innovation with Impact, Carnegie Mellon University
"Enhancing Expressivity in Virtual Reality with Biosignals"