

# SIYAN ZHAO

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## RESEARCH STATEMENT

My work explores how social interactions are associated with subjective well-being. Specifically, my research applies mobile sensing to collect behavioral data on smartphones. The data can predict when social interactions happen and through which medium the interaction will occur. This powerful method provides an abundance of data, on which I apply statistical models to understand the role of social interactions on one's well-being.

## WORK EXPERIENCE

**Facebook** *May. 2019 - Oct. 2019*

*Research Consultant*

- Scoped research questions and lead qualitative analyses on a cross-cultural survey dataset about social interactions.
- Conducted linear regressions, topic modeling, and thematic analysis.

**Facebook** *May. 2017 - Aug. 2017*

*Research Consultant*

- Worked in a cross-functional team of engineers, product managers, and research managers to prioritize research directions.
- Designed and lead psychophysics studies on perception of haptic phonemes.
- Presented the first set of haptic phonemes to senior researchers and managers.

**Disney Research, The Walt Disney Company** *Aug. 2015 - Dec. 2015*

*Research Consultant*

- Built a haptic toolkit for media designers to easily create haptic experiences.
- Conducted multiple design workshops to iterate the toolkit with designers.

**Disney Research, The Walt Disney Company** *Aug. 2014 - Jul. 2015*

*Research Associate*

- Lead user lab studies to understand how people perceive haptics signals.

**University of Pittsburgh Medical Center, HCI CAPSTONE** *Jan. 2014 - May 2014*

*User Research Lead*

- Worked with doctors, engineers and designers to build a decision aid for emphysema patients to decide if they need a lung transplant.
- Lead user studies, e.g., interviews, observations, and think-aloud sessions, with patients, caretakers, and other stockholders to uncover their needs.

**Disney Research, The Walt Disney Company** *May 2013 - Dec. 2013*

*Lab Associate*

- Designed and conducted lab research to understand how people interpret haptics as semantics.
- Applied results in an application that assists children in story listening.

## EDUCATION

**Ph.D. in Human-Computer Interaction** *Aug. 2015 - Present*

Carnegie Mellon University, School of Computer Science

Advisor: Jason Hong, Robert Kraut

**M.S. in Human-Computer Interaction** *2020*

Carnegie Mellon University, School of Computer Science

**B.S. in Cognitive Science & Human-Computer Interaction** *May 2014*

Carnegie Mellon University, GPA: 3.72 / 4.00

## SKILLS

**Programming Languages** Python, Stata, R, SQL, HTML/CSS/JavaScript

**Statistical Tools** T-test, ANOVA, Regression, Clustering, Principal Component Analysis

**Research Methods** Surveys, Interviews, Contextual Inquiry, Think-Aloud

**Design Methods** Persona, Storyboarding, Wireframing, Prototyping, Paper Sketching

## PUBLICATIONS

### PEER-REVIEWED PAPERS

- [P12] E. Litt, S. Zhao, R. E. Kraut, M. Burke. (2020) "What Are Meaningful Social Interactions in Today's Media Landscape? A Cross-Cultural Survey", in *Social Media + Society*.
- [P11] A. Israr, S. Zhao, Z. Schwemler, A. Fritz. (2019) "Stereohaptics Toolkit for Dynamic Tactile Experiences", in *International Conference on Human-Computer Interaction*. **(Best Paper Award)**
- [P10] C. Y. Park, C. Faklaris, S. Zhao, A. Sciuto, L. Dabbish, J. Hong. (2018) "*Share and Share Alike? An Exploration of Secure Behaviors in Romantic Relationships*", in *Fourteenth Symposium on Usable Privacy and Security*.
- [P9] J. McDonald, S. Zhao, J. Liu, M. L. Rivera. (2018) "*MaxiFab: Applied Fabrication to Advance Period Technologies*", in *Proceedings of the 2018 ACM Conference Companion Publication on Designing Interactive Systems (DIS '18 Companion)*. **(Best Provocation Honorable Mention)**

- [P8] S.Zhao, A.Israr, F. Lau, F. Abnoui. (2018) “*Coding Tactile Symbols for Phonemic Communication*”, in ACM Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI’18).
- [P7] Z. Chen, W. Hu, J. Wang, S. Zhao, B. Amos, G. Wu, K. Ha, K. Elgazzar, P. Pillai, R. Klatzky, D. Siewiorek, M. Satyanarayanan. (2017) “*An Empirical Study of Latency in an Emerging Class of Edge Computing Applications for Wearable Cognitive Assistance*”, in IEEE Symposium on Edge Computing (SEC’17).
- [P6] S.Zhao, A. Israr, M. Fenner, R. L. Klatzky. (2017) “*Intermanual Apparent Tactile Motion and its Extension to 3D Interactions*”, in IEEE Transactions on Haptics.
- [P5] S. Zhao, J. Lehman, A. Israr, & R. Klatzky. (2015) “*Using Haptic Inputs to Enrich Story Listening for Young Children*”, in Proceedings of the 14th International Conference on Interaction Design and Children (IDC ‘15), pp. 239 - 242.
- [P4] S. Zhao, A. Israr, R. Klatzky. (2015) “*Intermanual apparent tactile motion on handheld tablets*”, in World Haptics Conference (WHC ‘15), IEEE , pp. 241 - 247.
- [P3] A. Israr, S. Zhao, and O. Schneider. (2015) “*Exploring Embedded Haptics for Social Networking and Interactions*”, in Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA ‘15).
- [P2] O. Schneider, S. Zhao, & A. Israr. (2014) “*FeelCraft: User-Crafted Tactile Content*”, in Proceedings of 1st Asia Haptics, Tsukuba, Japan.
- [P1] A. Israr, S. Zhao, K. Schwalje, R. Klatzky, & J. Lehman. (2014) “*Feel effects: enriching storytelling with haptic feedback*”, in ACM Transactions on Applied Perception (TAP), 11(3). **(Best Paper Award)**

## DEMONSTRATIONS / WORKSHOPS

- [D3] S. Zhao, Z. Schwemler, A. Fritz, A. Israr (2016) “*Stereo Haptics: Designing Haptic Interactions Using Audio Tools*”, workshop at the ACM International Conference on Tangible, Embedded and Embodied Interaction (TEI ‘16), Eindhoven, Netherlands.
- [D2] A. Israr, S. Zhao, K. McIntosh, J. Kang, Z. Schwemler, E. Brockmeyer, M. Baskinger, M. Mahler (2015) “*Po2: Augmented Haptics for Interactive Gameplay*”, demonstrated at SIGGRAPH 2015 Emerging Technology, LA
- [D1] S. Zhao, O. Schneider, R. Klatzky, J. Lehman, & A. Israr. (2014) “*FeelCraft: Crafting Tactile Experiences for Media using a Feel Effect Library*”, demonstrated at UIST 2014, Honolulu, Hawaii.

## PATENTS

J Chen, F WY Lau, A Israr, V P Chakkabala, R Turcott, S Zhao, F Abnoui. “*Machine communication system using haptic symbol set*”, US Patent App 15/949,409, pending.

A Israr, A A Fritz, Z T Schwemler, S Zhao. “*Haptic Effect Generation System*”, US Patent 01,801,659,25A1, issued May 21 2019.

A Israr, R Klatzky, S Zhao, JF Lehman, O Schneider. “*Customized Haptic Effects*”, US Patent 20,160,085,303,2016, issued Mar. 24 2016.

## INVITED TALKS

**Stereo Haptics in Augmented and Virtual Reality** *Jan. 2017*  
Hacking the Holodeck, MIT, Cambridge, MA

**Stereo Haptics: Designing Haptic Interactions Using Audio Tools** *Feb. 2016*  
Communication & Multimedia Design, Avans Hogeschool, Breda, Netherlands

## SELECTED PRESS COVERAGE

**CNBC.** Facebook researchers built a device that turns sounds into vibrations on your skin. *Apr. 2018*

**MIT Technology Review.** Getting e-mail on your skin is actually a thing now, thanks to Facebook. *Apr. 2018*

## AWARDS AND HONORS

**Bose Design Challenge Winner** An Audio Augmented Reality Medical Assistant for Healthcare Professionals 2018

**Best Paper Award** ACM Symposium on Applied Perception 2014

**Psi Chi**, International Honor Society in Psychology

**The Phi Beta Kappa Honor Society**

**Carnegie Mellon Senior Leadership Recognition Award** 2014

## TEACHING EXPERIENCE

**05-413/813 Human Factors** *Fall 2017*  
*Teaching Assistant, Carnegie Mellon University*

**05-431/631 Programming User Interfaces** *Fall 2016*  
*Teaching Assistant, Carnegie Mellon University*

## **SERVICE**

### **Reviewer**

CSCW 20, World Haptics Conference 19, UIST 19, World Haptics Conference 18, UIST 17, World Haptics Conference 17, CHI 15-17, IJHCS 16, Augmented Human 16, HAPTICS 16, World Haptics Conference 15

## **REFERENCES**

**Robert E. Kraut** *Herbert A. Simon Professor Emeritus of Human-Computer Interaction at Carnegie Mellon University*

**Jason I. Hong** *Professor at Human Computer Interaction Institute, Carnegie Mellon University*

**Roberta L. Klatzky** *Charles J. Queenan Jr. Professor of Psychology at Carnegie Mellon University*

**Daniel P. Siewiorek** *Buhl University Professor of Electrical and Computer Engineering and Computer Science at Carnegie Mellon University*