SIYAN ZHAO

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5000 Forbes Avenue, Pittsburgh, PA

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

Carnegie Mellon University *Aug. 2015 - Present*
Graduate Researcher
- Created machine-learning models to predict the medium through which social interactions occur using sensor data from smartphones.
- Conducted hierarchical linear regression analyses on longitudinal survey data to understand how social interactions affect well-being.
- Designed and ran multiple longitudinal studies with over 1000 participants to collect survey and smartphone sensor data.

Facebook *May. 2019 - Aug. 2019*
Research Consultant
- Scoped research questions and lead qualitative analyses on a large-scale cross-cultural survey dataset about social interactions.
- Applied linear regression, topic modeling, and thematic analysis to qualitatively and qualitatively understand what makes social interactions meaningful.

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 design workshops with designers and design researchers to iterate on the toolkit.

Disney Research, The Walt Disney Company *Aug. 2014 - Jul. 2015*
Research Associate
• Lead psychophysical studies to understand how people perceive haptics signals.
• Used ANOVA to understand how perception thresholds of haptic signals vary based on the frequency and amplitude of the 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, <u>S. Zhao</u>, 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, <u>S. Zhao</u>, 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, <u>S. Zhao</u>, 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]   <u>S.Zhao</u>, A.Israr, F. Lau, F. Abnousi. (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, <u>S. Zhao,</u> 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]   <u>S.Zhao</u>, A. Israr, M. Fenner, R. L. Klatzky. (2017) *"Intermanual Apparent Tactile Motion and its Extension to 3D Interactions"*, in IEEE Transactions on Haptics.

[P5]   <u>S. Zhao</u>, 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]   <u>S. Zhao</u>, 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, <u>S. Zhao</u>, 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, <u>S. Zhao</u>, & A. Israr. (2014) *"FeelCraft: User-Crafted Tactile Content"*, in Proceedings of 1st Asia Haptics, Tsukuba, Japan.

[P1]   A. Israr, <u>S. Zhao</u>, 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]   <u>S. Zhao</u>, 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, <u>S. Zhao</u>, 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]   <u>S. Zhao</u>, 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, <u>S Zhao,</u> F Abnousi. *"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, <u>S Zhao</u>, 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

85-440 Studies in Chinese Literature & Culture *Fall 2011*
Writing 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*