

## RESEARCH INTEREST

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I design, develop, and evaluate new personalized health data experiences that enable people to gain deeper insight and value from their data. Specifically, I focus on opportunities for individualized interventions that can be more effective and appropriate than one-size-fits-all population based interventions.

## EDUCATION

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- 2014 - 06/2020  
(expected) **Ph.D. Candidate - Computer Science & Engineering**, University of Washington  
Advisor: James Fogarty  
Committee: James Fogarty, Sean A. Munson, Julie A. Kientz, Wanda Pratt, and Anind K. Dey
- 2011 - 2012 **Master of Science - Computer Science**, Georgia Institute of Technology  
Advisors: Gregory Abowd and John Stasko
- 2007 - 2011 **Bachelor of Engineering - Computer Engineering**, Gujarat University

## ACADEMIC RESEARCH

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- 09/2014 - present **Graduate Researcher**, Computer Science & Engineering, University of Washington, USA  
Advisor: James Fogarty  
Working with an interdisciplinary team of computer science, design, and medical researchers to design, test, and implement novel solutions for personalizing health data.
- 06/2014 - 08/2014 **Research Intern**, National Institute of Design, India  
Supervisor: Jignesh Khakhar  
Built a 3D printer from locally sourced materials and modified it to be used as a circuit printer.
- 01/2012 - 12/2012 **Graduate Researcher**, Ubiquitous Computing Lab, Georgia Institute of Technology, USA  
Advisor: Gregory Abowd  
Collected activity data using on body sensors for autistic students and designed a visual analytics tool for inspecting the qualitative and quantitative data.
- 08/2011 - 12/2011 **Graduate Researcher**, Synaesthetic Media Lab, Georgia Institute of Technology, USA  
Advisor: Ali Mazalek  
Explored various modalities of collaboration using tangible user interface on tabletops.

## INDUSTRY EXPERIENCE

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- 06/2017 - 09/2017 **User Experience Research Intern**, Security & Privacy User Experience Team, Google, USA  
Manager: Manya Sleeper & Tara Matthews  
Designed, deployed, and analyzed a study to understand visitor dynamics surrounding in-home devices to inform design of better access control mechanisms.
- 02/2013 - 03/2014 **User Experience Designer**, Isobar Boston, USA  
Director: Samantha Mansfield  
Conceived, designed, and prototyped meaningful interactive experiences for Fortune 500 clients as a part of multidisciplinary teams. Founded and led in-house maker space.
- 01/2011 - 04/2011 **Technical Intern**, Countandra, India  
Built monitoring tool for a distributed database system.

## RELATED RESEARCH AWARDS & HONORS

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- 2019 NIH R21 DK117431. PIs George Ioannou, James Fogarty. Directly based on my research in (J.6) *Evaluating a Novel, Portable, Self-administered Device ("Flicker-app") That Measures Critical Flicker Frequency as a Test for Minimal Hepatic Encephalopathy in Cirrhosis.*
- 2018 NIH R01 LM012810. PI James Fogarty. Directly based on my research in (J.1,2,4) *Open Tools for Self-Tracking, Self Experimentation, and Patient-Provider Collaboration in Symptom Self-Management and Clinical Care.*
- 2018 NSF IIS 1813675. PI James Fogarty. Directly based on my research in (J.4) *Support for Self-Tracking and Patient-Provider Collaboration Using Data for Multiple and Evolving Goals in People with Migraine.*
- 2018 Honorable Mention Award (Top 5%), DIS 2018 (for J.4)
- 2017 Honorable Mention Award (Top 5%), CHI 2017 (for J.2)

## OTHER AWARDS & HONORS

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- 2019 Special Recognition for Outstanding Review, CHI 2019
- 2019 Travel Grant, ICTDX 2019
- 2018 UbiComp/ISWC Student Travel Grant
- 2016 Runner-up, People's Choice Award (for P.3)
- 2016 Workshop on Interactive Systems in Healthcare (WISH) Travel Award (for W.3)
- 2014-2015 Three-Sixty Fellowship - Computer Science & Engineering at University of Washington

## REFEREED JOURNAL & CONFERENCE PUBLICATIONS

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- 2019 J.7 Examining Opportunities for Goal-Directed Self-Tracking to Support Chronic Condition Management  
Jessica Schroeder, Ravi Karkar, Natalia Murinova, James Fogarty, and Sean A. Munson  
*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 4, 1 (IMWUT)*
- 2018 J.6 Beacon: Designing a Portable Device for Self-Administering a Measure of Critical Flicker Frequency  
Ravi Karkar, Rafal Kocielnik, Xiaoyi Zhang, James Fogarty, George N. Ioannou, Sean A. Munson, and Jasmine Zia  
*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 2, 3 (IMWUT)*
- J.5 A Patient-Centered Proposal for Bayesian Analysis of Self-Experiments for Health  
Jessica Schroeder, Ravi Karkar, James Fogarty, Julie A. Kientz, Sean A. Munson, and Matthew Kay  
*Journal of Healthcare Informatics Research (JHIR)*
- J.4 ☆ Examining Self-Tracking by People with Migraine:  
Goals, Needs, and Opportunities in a Chronic Health Condition  
Jessica Schroeder, Chia-Fang Chung, Daniel A. Epstein, Ravi Karkar, Adele Parsons,  
James Fogarty, Sean A. Munson, and Natalia Murinova  
*ACM SIGCHI Conference on Designing Interactive Systems (DIS 2018)*  
Honorable Mention Award (Top 5%)
- 2017 J.3 DigiTouch: Reconfigurable Thumb-to-Finger Interaction  
for Input and Text Entry for Head-mounted Displays  
Eric Whitmire, Mohit Jain, Divye Jain, Greg Nelson, Ravi Karkar, Shwetak Patel, and Mayank Goel  
*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 1, 3 (IMWUT)*
- J.2 ☆ TummyTrials: A Feasibility Study of Using Self-Experimentation to Detect Individualized Food Triggers  
Ravi Karkar, Jessica Schroeder, Daniel Epstein, Laura Pina, Jeffrey Scofield, James Fogarty,  
Julie Kientz, Sean Munson, Roger Vilardaga, and Jasmine Zia  
*ACM Conference on Human Factors in Computing Systems (CHI 2017)*  
Honorable Mention Award (Top 5%)
- 2016 J.1 A Framework for Self-Experimentation in Personalized Health  
Ravi Karkar, Jasmine Zia, Roger Vilardaga, Sonali R. Mishra, James Fogarty, Sean A. Munson, and Julie A. Kientz  
*Journal of the American Medical Informatics Association 23, 3 (JAMIA)*

## ABSTRACTS, SYMPOSIA, & WORKSHOPS

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- 2019 W.9 Towards Self-Tracking in Chronic Liver Disease  
*Ravi Karkar, Rafal Kocielnik, Xiaoyi Zhang, James Fogarty, George N. Ioannou, Sean A. Munson, and Jasmine Zia*  
*Workshop on Interactive Systems in Healthcare (CHI 2019)*
- 2018 W.8 Designing for Diagnostic Self-Tracking  
*Ravi Karkar*  
*UbiComp/ISWC Doctoral Colloquium (UbiComp 2018)*
- W.7 Beacon: Translating Research to Adoption in the Field  
*Ravi Karkar*  
*HCI Across Borders Symposium (CHI 2018)*
- 2017 W.6 Hypothesis Formation and Hypothesis Testing: Design Challenges in Self-Experimentation  
*Ravi Karkar, Jessica Schroeder, James Fogarty, Julie A. Kientz, Sean A. Munson, and Jasmine Zia*  
*Digital Health & Self-Experimentation Workshop (CHI 2017)*
- W.5 Designing for Diagnostic Self-Tracking  
*Ravi Karkar*  
*DUB Doctoral Colloquium (UW 2017)*
- 2016 W.4 Toward a Portable, Self-Administered Critical Flicker Frequency Test  
*Ravi Karkar, Rafal Kocielnik, Xiaoyi Zhang, James Fogarty, George N. Ioannou, Sean A. Munson, and Jasmine Zia*  
*Workshop on Mental Health: Sensing & Intervention (UbiComp 2016)*
- W.3 Towards Self-Experimentation in Personalized Health  
*Ravi Karkar, Jasmine Zia, Roger Vilardaga, Sonali R. Mishra, James Fogarty, Sean A. Munson, and Julie A. Kientz*  
*Workshop on Interactive Systems in Healthcare (CHI 2016)*
- W.2 Personalizing Healthcare using Personal Data  
*Ravi Karkar, Jessica Schroeder, Jasmine Zia, Roger Vilardaga, James Fogarty, Sean A. Munson, and Julie A. Kientz*  
*Symposium on Use of Patient-Generated Data Beyond Self-Regulation (ISR11 2016)*
- 2015 W.1 Opportunities and Challenges for Self-Experimentation in Self-Tracking  
*Ravi Karkar, James Fogarty, Julie A. Kientz, Sean A. Munson, Roger Vilardaga, and Jasmine Zia*  
*Workshop on New Frontiers of Quantified Self: Finding New Ways for Engaging Users in Collecting and Using Personal Data (UbiComp 2015)*

## POSTERS

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- 2019 P.5 Developing a Novel, Portable, Self-administered Device (Flicker-app) That Measures Critical Flicker Frequency as a Test for Minimal Hepatic Encephalopathy  
*American Association for the Study of Liver Diseases. November 2019*
- 2018 P.4 Designing For Diagnostic Self-Tracking  
*Human Computer Interaction Consortium. June 2018.*
- 2016 P.3 TummyTrials : Using Self-Experimentation to Detect Individualized Food Triggers  
*University of Washington Computer Science & Engineering Affiliates. October 2016.*
- 2015 P.2 A Framework for Self-Experimentation in Personalized Health  
*University of Washington Computer Science & Engineering Affiliates. October 2015.*
- P.1 A Framework for Self-Experimentation  
*Intel Science and Technology Center for Pervasive Computing Retreat. August 2015.*

## TEACHING EXPERIENCE

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- Spring & Winter 2017 Teaching Assistant at University of Washington, USA  
Introduction to Human Computer Interaction (HCI) - CSE 440
- Summer 2014 Teaching Assistant at Indian Institute of Management Ahmedabad (IIM-A), India  
New Technology Application, Design and Business Models
- 05/2014 Co-Instructor, Center for Environmental Planning and Technology (CEPT), India  
Summer School Workshop on Bionic Smart and Adaptive Systems

## PATENT

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- 2019 Methods and Systems for Self-Administered Measurement of Critical Flicker Frequency (CFF)  
(pending) George Ioannou, James Fogarty, Jasmine Zia, Rafal Kocielnik, Ravi Karkar, Sean Munson, Xiaoyi Zhang

## SERVICE & EXTRACURRICULARS

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- Organizer
- 2019 ICTD X, Open Session Panel - *ICTD and Personal Informatics*
- 2018 Quantified Self Conference, Breakout Session - *Designing Platforms for N-of-1 Experiments with Mark Drangsholt*
- Program Committees
- 2020 Pervasive Health Conference, *EAI International Conference on Pervasive Computing Technologies for Healthcare*
- 2018 CHI Workshop - *A Short Workshop on Next Steps Towards Long Term Self Tracking*
- University Service
- 2017-2019 DUB Student Coordinator (*DUB is a multi unit HCI center on University of Washington campus*)
- 2018, 2019 DUB Doctoral Consortium Co-organizer
- 2017, 2019 CSE PhD Admission Committee (as reviewer)
- 2016-2018 CSE 590h Seminar Student Coordinator (*590h is the graduate level seminar on Interactive Systems*)
- 2015-2017 CSE PhD Mentorship Program (as mentor)
- 2017 DUB Retreat Student Coordinator
- 2017 CSE Visit Days HCI Area Scheduler-in Chief and Housing Coordinator
- 2016 CSE Visit Days Housing Coordinator and Activity Coordinator
- Reviewer
- 2017 - 2019 CHI, *ACM Conference on Human Factors in Computing Systems*
- 2019 CSCW, *ACM Conference on Computer-Supported Cooperative Work and Social Computing*
- 2019 TEI, *ACM International Conference on Tangible, Embedded and Embodied Interaction*
- 2016 - 2018 IMWUT, *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (previously UbiComp)*
- 2018 AMIA, *American Medical Informatics Association*
- 2018 IDC, *ACM Interaction Design and Children Conference*
- 2018 DIS, *ACM SIGCHI Conference on Designing Interactive Systems*
- 2017 ISWC, *International Symposium on Wearable Computers*
- 2017 Pervasive Health, *EAI International Conference on Pervasive Computing Technologies for Healthcare*
- Student Volunteer
- 2015, 2017 UbiComp, *ACM International Joint Conference on Pervasive and Ubiquitous Computing*
- 2012, 2016 CHI, *ACM Conference on Human Factors in Computing Systems*
- Other
- 2018 UbiComp Broadening Participation Workshop Mentor
- 2008 - 2011 Project Leader, YUVA Unstoppable (not-for-profit), India

## MENTORING

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Summer 2019	Esther Chien, <i>UW BS Computer Science &amp; Engineering</i>
Spring 2019	Drew Burack, Molly Foley, Neil Perrin, and Humza Talat (ME 495), <i>UW BS in Mechanical Engineering</i>
Spring-Summer 2018	Yue (Will) Wang, <i>UW Master of Human-Computer Interaction and Design</i>
Summer 2018	Clarissa Song, <i>UW MS Computer Science &amp; Engineering</i>
10/2017 - 05/2018	Tejas Bharadwaj, <i>UW BS Computer Science &amp; Engineering</i>
Winter 2018	Jessica Lee Zhu, <i>UW BS Computer Science &amp; Engineering</i>
Spring 2017	Liam McDonnell, <i>UW Undergraduate</i>
Autumn 2015	Jiayao (Clara) Lu, <i>UW BS Nursing + Computer Science &amp; Engineering</i>
Autumn 2015	Yuhan (Zoe) Lu, <i>UW BS Computer Science &amp; Engineering</i>
Summer-Autumn 2015	Ian Turner, <i>UW BS Computer Science &amp; Engineering</i>

## REFERENCES

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### James Fogarty

*Professor, Computer Science & Engineering, University of Washington*  
[jfogarty@cs.washington.edu](mailto:jfogarty@cs.washington.edu)

### Sean A. Munson

*Associate Professor, Human Centered Design & Engineering, University of Washington*  
[smunson@uw.edu](mailto:smunson@uw.edu)

### Julie A. Kientz

*Professor, Human Centered Design & Engineering, University of Washington*  
[jkientz@uw.edu](mailto:jkientz@uw.edu)

### Anind K. Dey

*Dean and Professor, The Information School, University of Washington*  
[anind@uw.edu](mailto:anind@uw.edu)

### George N. Ioannou

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*Director Hepatology, Veteran Affairs Puget Sound Health Care System*  
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