RAVI KARKAR

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RESEARCH INTEREST

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.

APPOINTMENTS

09/2022 - ongoing **Assistant Professor** - College of Information & Computer Sciences, University of Massachusetts

11/2020 - 06/2022 **Adjunct Assistant Professor** - College of Information & Computer Sciences, University of Massachusetts

09/2020 - 08/2022 **Postdoctoral Scholar** - Computer Science & Engineering, University of Washington
Mentors: James Fogarty and Gary Hsieh

EDUCATION

09/2014 - 08/2020 **Doctor of Philosophy - Computer Science & Engineering**, University of Washington
Advisor: James Fogarty
Committee: James Fogarty, Sean A. Munson, Julie A. Kientz, Wanda Pratt, & Anind K. Dey
Dissertation: Designing Personal Health Technologies for
Translating Population-Level Evidence into Personal Understanding

09/2014 - 12/2016 **Master of Science - Computer Science & Engineering**, University of Washington
Advisor: James Fogarty

08/2011 - 12/2012 **Master of Science - Computer Science**, Georgia Institute of Technology
Advisors: Gregory Abowd & John Stasko

06/2007 - 06/2011 **Bachelor of Engineering - Computer Engineering**, Gujarat University

INDUSTRY EXPERIENCE

06/2017 - 09/2017 **User Experience Research Intern**, Security & Privacy User Experience Team, Google, USA
Manager: Manya Sleeper & Tara Matthews

02/2013 - 03/2014 **User Experience Designer**, Isobar Boston, USA
Director: Samantha Mansfield

01/2011 - 04/2011 **Technical Intern**, Countandra, India

AWARDS & HONORS

2022 UW Population Health Initiative Pilot Grant: Co-Investigator ~$100k
2022 CSE Postdoc Travel Award (for W.14)
2019 Special Recognition for Outstanding Review, CHI 2019
2019 Travel Grant, ICTDX 2019
2018 Honorable Mention Award (Top 5%), DIS 2018 (for J.4)
2018 UbiComp/ISWC Student Travel Grant
2017 Honorable Mention Award (Top 5%), CHI 2017 (for J.2)
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

2022 J.10 (in preparation) Evaluating a Novel, Portable, Self-Administered Device ("Beacon") that Measures Critical Flicker Frequency as a Screening Test for Minimal Hepatic Encephalopathy
Philip Vutien*, Richard Li*, *Ravi Karkar*, Kara Walter, Sean A. Munson, James Fogarty, Michael Yacoub, Isabella Bueno, & George N. Ioannou (* = co-first authors)

J.9 Using Health Concept Surveying to Elicit Usable Evidence: Case Studies of a Novel Evaluation Methodology
Alex Mariakakis, *Ravi Karkar*, Shwetak N Patek, Julie A Kientz, James Fogarty, & Sean A Munson
Journal of Medical Internet Research Human Factors 9, 1 (JMIR)

2020 J.8 The Importance of Starting with Goals in N-of-1 Studies
Sean A Munson, Jessica Schroeder, *Ravi Karkar*, Julie A Kientz, Chia-Fang Chung, & James Fogarty
Frontiers in Digital Health 2, 3 (Frontiers)

2019 J.7 Examining Opportunities for Goal-Directed Self-Tracking to Support Chronic Condition Management
Jessica Schroeder, *Ravi Karkar*, Natalia Murinova, James Fogarty, & 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, & 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, & 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, & 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, & 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, & 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, & Julie A. Kientz
Journal of the American Medical Informatics Association 23, 3 (JAMIA)

ABSTRACTS, SYMPOSIA, & WORKSHOPS

2022 W.14 Challenges and Opportunities in Translating HCI Health Research to Clinical Practice
Ravi Karkar
Human-Computer Interaction Consortium (HCIC)

W.13 SCOPE: A Pragmatic Study Examining Technology-Enhanced Collaborative Psychosocial Care in the Cancer Setting
Jina Suh, *Ravi Karkar*, Tae Jones, Anant Mittal, Lydia Andris, Yihao Zheng, Amy M. Bauer, Ty Lostutter, James Fogarty, Gary Hsieh, & Jesse Fann
Society for Digital Mental Health Annual Meeting (SDMH)

2021 W.12 Finding a New Path for HCIC
Kelly Mack, Anne Spencer Ross, James Fogarty, Alexis Hiniker, *Ravi Karkar,* Julie A. Kientz, Jennifer Mankoff, Sean A. Munson, Wanda Pratt, & Daniela Rosner
Human-Computer Interaction Consortium (HCIC)

2020 W.11 Evaluating a Novel, Portable, Self-Administered Device ("Flicker-app") That Measures Critical Flicker Frequency as a Test for Hepatic Encephalopathy in Patients with Cirrhosis
Philip Vutien, *Ravi Karkar,* Richard Li, Kara Walter, Sean Munson, James Fogarty, & George Ioannou
American Association for the Study of Liver Diseases (AASLD)

2019 W.10 Developing a Novel, Portable, Self-administered Device (Flicker-app) That Measures Critical Flicker Frequency as a Test for Minimal Hepatic Encephalopathy
Kara Walter, *Ravi Karkar*, Sean Munson, James Fogarty, & George Ioannou
American Association for the Study of Liver Diseases (AASLD)

W.9 Towards Self-Tracking in Chronic Liver Disease
Ravi Karkar, Rafal Kocielnik, Xiaoyi Zhang, James Fogarty, George N. Ioannou, Sean A. Munson, & Jasmine Zia
Workshop on Interactive Systems in Healthcare (CHI)

2018 W.8 Designing for Diagnostic Self-Tracking
Ravi Karkar
UbiComp/ISWC Doctoral Colloquium (UbiComp)

W.7 Beacon: Translating Research to Adoption in the Field
Ravi Karkar
HCI Across Borders Symposium (CHI)

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, & Jasmine Zia
Digital Health & Self-Experimentation Workshop (CHI)

W.5 Designing for Diagnostic Self-Tracking
Ravi Karkar
DUB Doctoral Colloquium (DUB DC)

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, & Jasmine Zia
Workshop on Mental Health: Sensing & Intervention (UbiComp)

W.3 Towards Self-Experimentation in Personalized Health
Ravi Karkar, Jasmine Zia, Roger Vilardaga, Sonali R. Mishra, James Fogarty, Sean A. Munson, & Julie A. Kientz
Workshop on Interactive Systems in Healthcare (CHI)

W.2 Personalizing Healthcare using Personal Data
Ravi Karkar, Jessica Schroeder, Jasmine Zia, Roger Vilardaga, James Fogarty, Sean A. Munson, & Julie A. Kientz
Symposium on Use of Patient-Generated Data Beyond Self-Regulation (ISRII)

2015 W.1 Opportunities and Challenges for Self-Experimentation in Self-Tracking
Ravi Karkar, James Fogarty, Julie A. Kientz, Sean A. Munson, Roger Vilardaga, & Jasmine Zia
Workshop on New Frontiers of Quantified Self: Finding New Ways for Engaging Users in Collecting and Using Personal Data (UbiComp)

POSTERS

2018 P.4 Designing For Diagnostic Self-Tracking
Human Computer Interaction Consortium (HCIC)

2016 P.3 TummyTrials : Using Self-Experimentation to Detect Individualized Food Triggers
University of Washington Computer Science & Engineering Affiliates (CSE Affiliates)

2015 P.2 A Framework for Self-Experimentation in Personalized Health
University of Washington Computer Science & Engineering Affiliates (CSE Affiliates)

P.1 A Framework for Self-Experimentation
Intel Science and Technology Center for Pervasive Computing Retreat (ISTCPC)

TEACHING EXPERIENCE

Lecturer at University of Massachusetts
Fall 2022 Introduction to Human Computer Interaction (HCI) - CompSci 325

Teaching Assistant at University of Washington, USA
Sp & Wi 2017 Introduction to Human Computer Interaction (HCI) - CSE 440

Teaching Assistant at Indian Institute of Management Ahmedabad (IIM-A), India
Su 2014 New Technology Application, Design and Business Models

Co-Instructor, Center for Environmental Planning and Technology (CEPT), India
05/2014 Summer School Workshop on Bionic Smart and Adaptive Systems

PATENT

2021 Methods and Systems for Self-Administered Measurement of Critical Flicker Frequency (CFF)
17/014,938 George Ioannou, James Fogarty, Jasmine Zia, Rafal Kocielnik, *Ravi Karkar*, Sean Munson, & Xiaoyi Zhang

INVITED TALKS

2020 A Patient-Centered Proposal for Bayesian Analysis of Self-Experiments for Health
ALACRITY Center, University of Washington

Designing Personal Health Technologies
University of Massachusetts Ahmerst
Johns Hopkins University
Northwestern University
University of California Irvine

2017 Flicker System Development
Frontiers in Gastroenterology & Hepatology, University of Washington

2016 Personalizing Healthcare Using Personal Data
International Society for Research on Internet Interventions

Towards Self-Experimentation in Personalized Health
Workshop on Interactive Systems in Healthcare, CHI 2016
Intel Science and Technology Center for Pervasive Computing

SERVICE & EXTRACURRICULARS

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
2023 CHI (Health Subcommittee) - *ACM Conference on Human Factors in Computing Systems*
2022 CHI (Health Subcommittee) - *ACM Conference on Human Factors in Computing Systems*
2022 MobiSys Workshop - *Emerging Devices for Digital Biomarkers*

2020 Graphics Interface Conference
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

At University of Massachusetts

2022 Faculty Search Committee
2022 PhD Admissions Committee

At University of Washington

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

2022 TOCHI, *Transactions on Computer-Human Interaction*
2017 - 2023 CHI, *ACM Conference on Human Factors in Computing Systems*
2021 C&C, *ACM Conference on Creativity & Cognition*
2018, 2021 AMIA, *American Medical Informatics Association*
2020 GI, *Graphics Interface Conference*
2017, 2020 Pervasive Health, *EAI International Conference on Pervasive Computing Technologies for Healthcare*
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 IDC, *ACM Interaction Design and Children Conference*
2018 DIS, *ACM SIGCHI Conference on Designing Interactive Systems*
2017 ISWC, *International Symposium on Wearable Computers*

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

ADVISING & MENTORING

At University of Massachusetts

2022 -ongoing Postdoctoral Mentee
Manideepa Mukherjee Bhakat (co-mentored with Deepak Ganesan), *Computer Science.* 06/2022 - ongoing.

2022 -ongoing Doctoral Advisees
Abhay Sheel Anand (co-advised with Deepak Ganesan), *Computer Science.* 09/2022 - ongoing.
Prateek Chanda (co-advised with Sunghoon Ivan Lee), *Computer Science.* 01/2023 - ongoing.

2020 -2021 Masters Students Mentees
Amrit Alok & Shruti Chanumolu (CompSci 701), *Computer Science.* Fa 2020 - Sp 2021.

At University of Washington

2019-ongoing Doctoral Student Mentees
Tae Jones, *Computer Science & Engineering.* 09/2021 - ongoing.
Richard Li, *Computer Science & Engineering.* 09/2019 - ongoing.

2018 Masters Students Mentees
Yue (Will) Wang, *Human-Computer Interaction and Design.* Sp-Su 2018.

Clarissa Song, *Computer Science & Engineering.* Su 2018.

2015 - 2020 Undergraduate Students Mentees

Nikolas Ioannou (DUB REU), *Computer Science & Engineering.* Su 2020.
Esther Chien (DUB REU), *Computer Science & Engineering.* Su 2019.
Drew Burack, Molly Foley, Neil Perrin, & Humza Talat (ME 495), *Mechanical Engineering.* Sp 2019.
Tejas Bharadwaj, *Computer Science & Engineering.* Fa 2017 - Sp 2018.
Jessica Lee Zhu, *Computer Science & Engineering.* Wi 2018.
Liam McDonnell, *Undergraduate.* Sp 2017.
Jiayao (Clara) Lu, *Nursing + Computer Science & Engineering.* Au 2015.
Yuhan (Zoe) Lu, *Computer Science & Engineering.* Au 2015.
Ian Turner, *Computer Science & Engineering.* Su-Au 2015.

FUNDRAISING

Internal Fundraising

$100,000 University of Washington Population Health Initiative - Chronic Disease Pilot Grant
(2022-2023) *Evaluating a novel, portable, self-administered device ("Beacon") that measures critical flicker frequency toward at-home testing for minimal hepatic encephalopathy in cirrhosis*
Co-Investigator (with co-PIs George N. Ioannou & James Fogarty and co-Is Sean A. Munson, Philip Vutien, & Richard Li)