MAYANK GOEL

My research focuses on developing new, practical, and deployable sensing and machine learning solutions. I largely focus on building systems to solve problems in health sensing, technologies, for the developing world, and novel user interaction, with an eye toward reducing deployment barriers. Specifically, I focus on extending the capabilities of on-board sensors on consumer devices like mobile phones, tablets, and smartwatches. To develop these sensing solutions, I draw on my diverse set of skills, including human-computer interaction, mobile computing, sensing, signal processing, and machine learning. My research is inherently interdisciplinary, and I regularly collaborate with biomedical engineers and designers as well as doctors, nurses, and community health workers around the world.

Associate Professor
Software & Societal Systems Department
& Human-Computer Interaction Institute
School of Computer Science
Carnegie Mellon University
Pittsburgh, PA

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www.mayankgoel.com
LAB WEBSITE
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mayankgoel@cmu.edu

EDUCATION

Ph.D. 2011 - 2016	Computer Science and Engineering, University of Washington Advisors: Shwetak Patel and Gaetano Borriello Thesis: Extending the capabilities of smartphone sensors for applications in interaction and health
M.S. 2007 - 2009	Computer Science, Georgia Institute of Technology Advisors: Gregory Abowd Area: Mobile and Ubiquitous Computing
B.Tech. 2003-2007	Computer Science and Engineering, GGSIP University, India Institute: Maharaja Agrasen Institute of Technology

HONORS & AWARDS

-	12 Best Paper Nominations and Honorable Mention Awards
2023	Honorable Mention Award at CHI 2023 for IMU-Poser [P52]
2022	Center for Machine Learning and Health (CMLH) Translational Fellowship 2022
2021	Honorable Mention Award at CHI 2021 for PrivacyMic [P39]
2020	Google Faculty Research Award
2019	Best Paper Runner-up in IEEE Pervasive 2019 for [P26] Honorable Mention Award at UIST 2019 for MeCap [P32] & at CHI 2019 for Interferi [P29]
2016	Best Paper Nominee at CHI 2016 for SpiroCall [P17] Nominet Trust 100 (NT100) for SpiroCall [P7]
2015	Best Paper Nominee at UbiComp 2015 for HyperCam [P16] & at CHI 2015 for Tongue-in-Cheek [P13] Best Paper Runner-up at PerCom 2015 for WiBreathe [P12]
2014	Microsoft Research PhD Fellowship Best Paper Nominee at UbiComp 2014 for BiliCam [P11] Runner Up Research Prize from Madrona Ventures for WiBreathe

2013 Finalist in Global Social Entrepreneurship Competition for SpiroSmart

2012 Best Paper Nominee at UbiComp 2012 for SpiroSmart [P4] & at CHI 2012 for WalkType [P3]

2011 Donald C. Whitworth Fellowship
Top Research Prize from Madrona Ventures for SpiroSmart

PROFESSIONAL EXPERIENCE

2016 - Present Carnegie Mellon University, Pittsburgh, PA
Associate Professor
Lead the Smash Lab, School of Computer Science.

Summer 2013 Microsoft Research, Computational User Experiences Group, Redmond, WA
Research Intern. Advisors: Scott Saponas, Neel Joshi, Dan Morris
Researched and designed prototypes for end-user hyperspectral imaging.

Summer 2012 Samsung Research America, San Jose, CA
Research Intern. Advisors: James Bo Begole, Stacie Hibino
Researched various multi-device interaction techniques.

2009 - 2011 Futuristek Compusoft Pvt. Ltd., New Delhi, India
Co-Founder and Research Scientist
Co-founded the start-up specializing in mobile computing. Focused on using a phone's on-device sensors to assist user in their daily tasks, such as driving.

PEER-REVIEWED CONFERENCE & JOURNAL PUBLICATIONS

P59 *Bring Privacy To The Table: Interactive Negotiation for Privacy Settings of Shared Sensing Devices*
Haozhe Zhou, **Mayank Goel**, Yuvraj Agarwal
Proceedings of the Annual ACM Conference on Human Factors in Computing Systems (CHI)

P58 *EITPose: Wearable and Practical Electrical Impedance Tomography for Continuous Hand Pose Estimation*
Alexander Kyu, Hongyu Mao, Junyi Zhu, **Mayank Goel**, Karan Ahuja
Proceedings of the Annual ACM Conference on Human Factors in Computing Systems (CHI)

P57 *Kirigami: Lightweight Speech Filtering for Privacy-Preserving Activity Recognition using Audio*
Sudershan Boovaraghavan, Haozhe Zhou, **Mayank Goel**, Yuvraj Agarwal
Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT)

P56 *JoulesEye: Energy Expenditure Estimation and Respiration Sensing From Thermal Imagery While Exercising*
Rishiraj Adhikary, Maite Sadeh, Nipun Batra, **Mayank Goel**
Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT)

P55 *LemurDx: Using Unconstrained Passive Sensing for an Objective Measurement of Hyperactivity in Children with no Parent Input*
Riku Arakawa, Karan Ahuja, Kristie Mak, Gwendolyn Thompson, Sam Shaaban, Oliver Lindhiem, **Mayank Goel**
Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT)

P54 *MI-Poser: Human Body Pose Tracking using Magnetic and Inertial Sensor Fusion with Metal Interference Mitigation*
Riku Arakawa, Bing Zhou, Gurunandan Krishnan, **Mayank Goel**, Shree K. Nayar
Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT)

P53 *VAX: Using Existing Video and Audio-based Activity Recognition Models to Bootstrap Privacy-Sensitive Sensors*
Prasoon Patidar, **Mayank Goel,** Yuvraj Agarwal
Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT)

P52 *IMUPoser: Full-Body Pose Estimation using IMUs in Phones, Watches, and Earbuds*
Vimal Mollyn, Riku Arakawa, **Mayank Goel**, Chris Harrison, Karan Ahuja
Proceedings of the Annual ACM Conference on Human Factors in Computing Systems (CHI)
Honorable Mention Award (Top 5%)

P51 *uKnit: A Position-Aware Reconfigurable Machine-Knitted Wearable for Gestural Interaction and Passive Sensing using Electrical Impedance Tomography*
Tianhong Catherine Yu, Riku Arakawa, James McCann, **Mayank Goel**
Proceedings of the Annual ACM Conference on Human Factors in Computing Systems (CHI)

P50 *PrISM-Tracker: A Framework for Multimodal Procedure Tracking Using Wearable Sensors and State Transition Information with User-Driven Handling of Errors and Uncertainty*
Riku Arakawa, Hiromu Yakura, Vimal Mollyn, Suzanne Nie, Emma Russell, Dustin Demeo, Haarika Reddy, Alexander Maytin, Bryan Carroll, Jill Fain Lehman, **Mayank Goel**
Proc. of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT) 2022

P49 *A semantic-based approach to digital content placement for immersive environments*
Jingyang Liu, Yunzhi Li, **Mayank Goel**
The Visual Computer 2022

P48 *RGBDGaze: Gaze Tracking on Smartphones with RGB and Depth Data*
Riku Arakawa, **Mayank Goel**, Chris Harrison, Karan Ahuja
Proceedings of the International Conference on Multimodal Interaction (ICMI) 2022

P47 *SAMoSA: Sensing Activities with Motion and Subsampled Audio*
Vimal Mollyn, Karan Ahuja, Dhruv Verma, Chris Harrison, **Mayank Goel**
Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) 2022

P46 *Predicting Multiple Sclerosis Outcomes during the COVID-19 Stay-at-Home Period: Observational Study Using Passively Sensed Behaviors and Digital Phenotyping*
Prerna Chikersal, Shruthi Venkatesh, Karmen Masown, Elizabeth Walker, Danyal Quraishi, Anind Dey, **Mayank Goel**, Zongqi Xia
JMIR Mental Health 2022

P45 *Objective Measurement of Hyperactivity Using Mobile Sensing and Machine Learning: A Pilot Study*
Oliver Lindhiem, **Mayank Goel**, Sam Shaaban, Kristie Mak, Prerna Chikersal, Jamie Feldman, Jordan Harris
JMIR Formative Research (JFR) 2022

P44 *FitNibble: A Field Study to Evaluate the Utility and Usability of Automatic Diet Monitoring in Food Journaling Using an Eyeglasses-based Wearable.*
Abdelkareem Bedri, Yuchen Liang, Sudershan Boovaraghavan, Geoff Kaufman, **Mayank Goel**
IUI 2022.

P43 *IMU2Doppler: Cross-Modal Domain Adaptation for Doppler-based Activity Recognition Using IMU Data*
Sejal Bhalla, **Mayank Goel**, Rushil Khurana
UbiComp (IMWUT) 2022.

P42 *EyeMU Interactions: Gaze + IMU Gestures on Mobile Devices*
Andy Kong, Karan Ahuja, **Mayank Goel**, Chris Harrison
ICMI 2021.

P41 *Vid2Doppler: Synthesizing Doppler Radar Data from Videos for Training Privacy-Preserving Activity Recognition*
Karan Ahuja, Yue Jiang, **Mayank Goel**, Chris Harrison
CHI 2021.

P40 *Pose-on-the-Go: Approximating Partial User Pose with Smartphone Sensor Fusion and Inverse Kinematics*
Karan Ahuja, Sven Mayer, **Mayank Goel**, Chris Harrison
CHI 2021.

P39 *PrivacyMic: Utilizing Inaudible Frequencies for Privacy & Preserving Daily Activity Recognition.*
Yasha Iravantchi, Karan Ahuja, **Mayank Goel,** Chris Harrison, Alanson Sample
CHI 2021. Honorable Mention Award (Top 5%)

P38 *Detecting Depression and Predicting its Onset Using Longitudinal Symptoms Captured by Passive Sensing: A Machine Learning Approach With Robust Feature Selection*
Prerna Chikersal, Afsaneh Doryab, Michael Tumminia, Daniella Villalba, Janine Dutcher, Xinwen Liu, Sheldon Cohen, Kasey Creswell, Jennifer Mankoff, J. David Creswell, **Mayank Goel**, Anind Dey
ACM Transactions on Computer-Human Interaction (TOCHI), 2020

P37 *BodySLAM: Opportunistic User Digitization in Multi-User AR/VR Experiences*
Karan Ahuja , **Mayank Goel**, Chris Harrison
SUI 2020.

P36 *Direction-of-Voice (DoV): Estimation for Intuitive Speech Interaction with Smart Devices Ecosystems*
Karan Ahuja, Andy Kong, Mayank Goel, Chris Harrison
UIST 2020.

P35 *FitByte: Automatic Diet Monitoring in Unconstrained Situations Using Multimodal Sensing On Eyeglasses*
Abdelkarem Bedri, Diana Li, Rushil Khurana, Kunal Bhuwalka, **Mayank Goel**
CHI 2020.

P34 *Eyes on the Road: Detecting Phone Usage by Drivers Using On-Device Cameras*
Rushil Khurana, **Mayank Goel**
CHI 2020.

P33 *Digital Ventriloquism: Giving Voice to Everyday Objects*
Yasha Iravantchi, **Mayank Goel,** Chris Harrison
CHI 2020.

P32 *MeCap: Whole-Body Digitization for Low-Cost VR/AR Headsets*
Karan Ahuja, Chris Harrison, **Mayank Goel**, Robert Xiao
UIST 2019. Honorable Mention Award (Top 5%)

P31 *Light Anchors: Appropriating Point Lights for Spatially-Anchored Augmented Reality Interfaces*
Karan Ahuja, Sujeath Pareddy, Robert Xiao, **Mayank Goel**, Chris Harrison
UIST 2019.

P30 *Detachable Smartwatch: More than a wearable*
Rushil Khurana, **Mayank Goel**, Kent Lyons
UBICOMP (IMWUT) 2019.

P29 *Interferi: Gesture Sensing using On-Body Acoustic Interferometry*
Yasha Iravantchi, Yang Zhang, Evi Bernitsas, **Mayank Goel**, Chris Harrison
CHI 2019. Honorable Mention Award (Top 5%)

P28 *BeamBand: Hand Gesture Sensing with Ultrasonic Beamforming*
Yasha Iravantchi, **Mayank Goel**, Chris Harrison
CHI 2019.

P27 *GymCam: Detecting, recognizing, and tracking simultaneous exercises in unconstrained scenes*
Rushil Khurana, Karan Ahuja, Zac Yu, Jennifer Mankoff, Chris Harrison, **Mayank Goel**
UBICOMP (IMWUT) 2019.

P26 *Challenges in Realizing Smartphone-based Health Sensing*
Alex Mariakakis, Edward J. Wang, Shwetak Patel, **Mayank Goel**
IEEE Pervasive Computing 2019. Best Paper Runner-up Award

P25 *RainCheck: Overcoming Capacitive Interference Caused by Rainwater on Smartphones*
Ying-Chao Tung, **Mayank Goel**, Isaac Zinda, Jacob O. Wobbrock
ICMI 2018.

P24 *Ubicoustics: Plug-and-Play Acoustic Activity Recognition*
Gierad Laput, Karan Ahuja, **Mayank Goel,** Chris Harrison
UIST 2018.

P23 *EyeSpyVR: Interactive Eye Sensing Using Off-The-Shelf, Smartphone-based VR Headsets*
Karan Ahuja, Rahul Islam, Varun Parashar, Kuntal Dey, Chris Harrison, **Mayank Goel**
UBICOMP (IMWUT) 2018.

P22 *Use of Smartphone App to Assess Neonatal Jaundice*
James A. Taylor, James W. Stout, Lilian de Greef, **Mayank Goel**, Shwetak Patel, Esther K. Chung, Aruna Koduri, Shawn McMahon, Jane Dickerson, Elizabeth A. Simpson, Eric Larson
Pediatrics August 2017.

P21 *Carpacio: Repurposing Capacitive Sensors to Distinguish Driver and Passenger Touches on In-Vehicle Screens*
Edward Wang, Jake Garrison, Eric Whitmire, **Mayank Goel,** Shwetak Patel
UIST 2017.

P20 *DigiTouch: Reconfigurable Thumb-to-Finger Input and Text Entry on Head Mounted Displays*
Eric Whitmire, Mohit Jain, Divye Jain, Gregory Nelson, Ravi Karkar, Shwetak Patel, **Mayank Goel**
UBICOMP (IMWUT) 2017.

P19 *EarBit: Using Wearable Sensors to Detect Eating Episodes in Unconstrained Environments*
Abdelkareem Bedri, Richard Li, Malcolm Haynes, Raj Prateek Kosaraju, Ishaan Grover, Temiloluwa Prioleau, Min Yan Beh, **Mayank Goel**, Thad Starner, Gregory Abowd
UBICOMP (IMWUT) 2017.

P18 *Design and learnability of vortex whistles for managing chronic lung function via smartphones*
Spencer Kaiser, Ashley Parks, Patrick Leopard, Charlie Albright, Jake Carlon, **Mayank Goel,** Damoun Nassehi, Eric C. Larson.
UBICOMP 2016.

P17 *SpiroCall: Measuring Lung Function over a Phone Call*
Mayank Goel, Elliot Saba, Maia Stiber, Eric Whitmire, Josh Fromm, Eric Larson, Gaetano Borriello, Shwetak Patel
CHI 2016. Best Paper Nominee (Top 5%)

P16 *HyperCam: Hyperspectral Imaging for Ubiquitous Computing Applications*
Mayank Goel, Eric Whitmire, Alex Mariakakis, Scott Saponas, Neel Joshi, Dan Morris, Brian Guenter, Marcel Gavriliu, Gaetano Borriello, Shwetak Patel
UBICOMP 2015. Best Paper Nominee (Top 5%)

P15 *MagnifiSense: Inferring Device Interaction using Wrist-Worn Passive Magneto-Inductive Sensors*
Edward Wang, Tien-Jui Lee, Alex Mariakakis, **Mayank Goel**, Sidhant Gupta, Shwetak Patel
UBICOMP 2015.

P14 *SwitchBack: Using Focus & Saccade Tracking to Guide Users' Attention for Mobile Task Resumption*
Alex Mariakakis, **Mayank Goel,** Tanvir Aumi, Shwetak Patel, Jacob Wobbrock
CHI 2015 (Acceptance Rate: 23%)

P13 *Tongue-in-Cheek: Using Wireless Signals to Enable Non-Intrusive and Flexible Facial Gestures*

***Mayank* Goel**, Chen Zhao, Ruth Ravichandran, Shwetak Patel
CHI 2015 (Acceptance Rate: 23%). Best Paper Nominee (Top 5%)

P12 *WiBreathe: Estimating Respiration Rate using Wireless Signals in Natural Settings in Home*

Ruth Ravichandran, Elliot Saba, Keyu Chen, **Mayank Goel**, Sidhant Gupta, Shwetak Patel
IEEE PerCom 2015. Best Paper Runner Up Award

P11 *BiliCam: Using Mobile Phones to Monitor Newborn Jaundice*

Lilian deGreef, **Mayank Goel**, Min Joon Seo, Eric Larson, James Stout, James Taylor, Shwetak Patel
UBICOMP 2014. Best Paper Nominee (Top 5%)

P10 *AirLink: Sharing Files Between Multiple Devices using In-Air Gestures*
Keyu Chen, Daniel Ashbrook, **Mayank Goel**, Sung-Hyuck Lee, Shwetak Patel
UBICOMP 2014.

P9 *SurfaceLink: Using Inertial and Acoustic Sensing to Enable Multi-Device Interaction on a Surface*
Mayank Goel, Brendan Lee, Tanvir Aumi, Shwetak Patel, Gaetano Borriello,
Stacie Hibino, James Begole
CHI 2014.

P8 *DopLink:Using the Doppler Effect for Multi-Device Interaction*
Tanvir Aumi, Sidhant Gupta, **Mayank Goel**, Eric Larson, Shwetak Patel
UBICOMP 2013.

P7 *ContextType: Using Hand Posture Information to Improve Mobile Touch Screen Text Entry*
Mayank Goel, Alex Jansen, Travis Mandel, Shwetak Patel, Jacob Wobbrock
CHI 2013.

P6 *Tracking Lung Function on any Phone*
Mayank Goel, Eric Larson, Morgan Redfield, Gaetano Borriello, Margaret Rosenfeld, Shwetak Patel
DEV 2013.

P5 *GripSense: Using Built-In Sensors to Detect Hand Posture and Pressure on Commodity Mobile Phones*
Mayank Goel, Jacob Wobbrock, Shwetak Patel
UIST 2012.

P4 *SpiroSmart: Using a Microphone to Measure Lung Function on a Mobile Phone*

Mayank Goel, Eric Larson, Gaetano Borriello, Sonya Heltshe, Magaret Rosenfeld, Shwetak Patel
UBICOMP 2012. Best Paper Nominee (Top 5%)

P3 *WalkType: Using Accelerometer Data to Accommodate Situational Impairments in Mobile Touch Screen Text Entry*

Mayank Goel, Leah Findlater, Jacob Wobbrock
CHI 2012. Best Paper Nominee (Top 5%)

P2 *Open Data Kit Sensors: A Sensor Integration Framework for Android at the Application Level*
Waylon Brunette, Rita Sodt, Rohit Chaudhri, **Mayank Goel**, Michael Falcone, Jayden VanOrden,
Gaetano Borriello
MOBISYS 2012.

P1 *Open Data Kit Sensors: Application-level Sensor Drivers for Android*
Rohit Chaudhri, Waylon Brunette, **Mayank Goel**, Rita Sodt, Michael Falcone, Jayden VanOrden,
Gaetano Borriello
DEV 2012.

BOOK CHAPTERS

C1. Pulmonary Monitoring Using Smartphones
Eric Larson, Elliot Saba, Spencer Kaiser, **Mayank Goel,** Shwetak Patel
Book: Mobile Health (Springer) 2017

ADVISING AND MENTORING

Ph.D. Students	Riku Arakawa (Fall 2021 - Present)
	Haozhe Zhou (Fall 2022 - Present) *Co-advised with Yuvraj Agarwal*
	Rishiraj Adhikary (Fall 2022 - Present) *External Mentor* *Primary Ph.D. Advisor: Nipun Batra (IIT Gandhinagar, India)*
Graduated Ph.D. Students	Prerna Chikersal (Fall 2017 - Present) *Co-advised with Anind Dey (UW)* *After graduation: TripAdvisor*
	Karan Ahuja (Fall 2017 - Present) *Co-advised with Chris Harrison* *After graduation: Northwestern University*
	Julian Ramos (Spring 2019 - Summer 2021) *Co-advised with Anind Dey (UW)* *After graduation: Meta Reality Labs.*
	Rushil Khurana (Fall 2016 - Summer 2021) *After graduation: AI 2 Allen Institute.*
	Abdelkareem Bedri (Fall 2016 - Summer 2021) *After graduation: Apple Inc.*
Masters Students	Hongyu Mao, Alexander Kyu, Tianhong (Catherine) Yu, Vimal Mollyn, Yukun Li, Rishabh Bhardwaj, Samadrita Das, Min Yan Beh, Pierre Amelot, Neeraj Talukdar, Priyanka Raja
Undergrad Students	**CMU:** Bingcheng Li**,** Suzzane Nie, Ruoyu (Vicky) Liu, Yuchen (David) Liang**,** Don Lee, Jett Hays, Carolyn Zhong, Diana Li, Trisha Dwivedi, Disha Das, Christine Wu, Phoebe Song, Nelson Wong, Vivek Shankar
	University of Pittsburgh: Katelyn Morrison, Vasco Xu, Zac Yu
	University of Washington: Aishwarya Mandyam, Molly Moen, Rushabh Mehta, Brendan Lee, Patrick Larson, Cameron Pickett, Michale Falcone, Jaylen VanOrden
	Other: Vimal Mollyn (IIT Madras), Maite Sadeh (Cornell), Soyon Kim (UCSD), Dhruv Verma (IIIT Delhi), Sejal Bhalla (IIIT Delhi), Shreyasvi Natraj

High School Students	Soumyadeep Bhattacharjee (Williamsville East High School) Deven Nahata (Shadyside Academy) Sara Kothari (after High School: Princeton University) Daniel Huss (Shadyside Academy) Prayag Vemulapalli (after High School: Washington University in St. Louis) Andrew Liu (after High School: UC Berkeley) Sanjay Seshan (after High School: MIT) Yuchen Liang (after High School: CMU) Neha Nagvekar (after High School: University of Washington) Maia Stiber (after High School: CalTech) Isaac Zinda (after High School: Harvey Mudd) Udit Ranasaria (after High School: CMU) Lukas Joswiak (after High School: University of Washington) Alka Pai (after High School: Brown University)

TEACHING EXPERIENCE

CMU	07-120 (Fall 2023 Mini-2). Introduction to Software Construction FCE Scores (out of 5): Overall Course: 4.5, Overall Teaching: 4.8, Importance of Subject: 4.7, Explanation of Subject: 4.6
	17-428/728 (Fall 2019-2022). Machine Learning and Sensing FCE Scores (out of 5): Overall Course: 4.6, Overall Teaching: 4.7, Importance of Subject: 4.8, Explanation of Subject: 4.6
	08-421/735 & 17-722/422 (Spring 2017-2023). Building User-Focused Sensing Systems Average FCE Scores (out of 5): Overall Course: 4.3, Overall Teaching: 4.5, Importance of Subject: 4.6, Explanation of Subject: 4.6
	08-530/736 (Fall 2017). Pervasive and Ubiquitous Computing FCE Scores (out of 5): Overall Course: 5.0, Overall Teaching: 4.9, Importance of Subject: 5, Explanation of Subject: 4.9
UW	UW EE 590 (Fall 2015). Advanced Topics in Digital Computers: Ubiquitous Computing IAS Scores (out of 5): Course as a whole: 4.7, Instructor's contribution: 4.8, Teaching effectiveness: 4.8, Instructor's enthusiasm: 5.0
	UW CSE 590P (Spring 2015). Advanced Topics in Ubiquitous Computing PMP IAS Scores (out of 5): Course as a whole: 4.8, Instructor's contribution: 4.8, Teaching effectiveness: 4.7, Instructor's enthusiasm: 5.0

SELECTED INVITED TALKS AND PANELS

T20. Billion Medical Devices
IIT Gandhinagar, India. December 2023.

T19. HCI in Clinical Contexts
Panelist at HCIC 2022, Lake Geneva WI.

T18. The Next Generation of Health Biometrics
Panelist at 2022 Digital Health Summit, Pittsburgh.

T17. Watches for Health and Behavior Sensing
Keynote at WristSense Workshop at PerCom 2022. March 2022.

T16. An Ecosystem of Smart Devices for Opportunistic and Continuous Health Sensing
Apple Inc. February 2021.

T15. An Ecosystem of Smart Devices for Opportunistic and Continuous Health Sensing
CMU Qatar. November 2020.

T14. An Ecosystem of Smart Devices for Opportunistic and Continuous Health Sensing
Dartmouth College. October 2020.

T13. Smarter Smartwatch for Health
Medical Wearables, San Jose. May 2019.

T12. Teaching Old Sensors New Tricks
Georgia Institute of Technology, Atlanta. March 2018.

T11. Teaching Old Sensors New Tricks
CMU Think, Florida, March 2018.

T10. Teaching Old Sensors New Tricks
Disney Research, Pittsburgh. April 2017.

T9. Making Devices Smarter and More Useful
Girls Who Code. Expedia, Seattle. August 2015.

T8. Making Devices Smarter and More Useful
Girls Who Code. AT&T, Seattle. August 2015.

T7. A Billion Medical Devices
TEDx UofW. Seattle. May 2015.

T6. Where is My Water Going?
AIA Seattle Water Forum. May 2014.

T5. SurfaceLink: Enabling Multi-Device Interaction on Mobile Devices
UW Computer Science and Engineering Industrial Affiliates. October 2013.

T4. Tracking Lung Function on Mobile Phones
Change Seminar, University of Washington. March 2013.

T3. Sensing and Accommodating for Situational Impairments on Mobile Devices
DUB Seminar, University of Washington. February 2013.

T2. GripSense: Using Built-In Sensors to Detect Hand Posture and Pressure on Mobile Phones.
UW Computer Science and Engineering Industrial Affiliates. October 2012.

T1. An Overview of Research in UW UbiComp Lab
Disney Research, Pittsburgh. September 2012.

SERVICE

Ph.D. Thesis Committee	Niloofar Nikookar (Schooll of Architecture, CMU) Sudershan Boovaraghavan (Societal Computing, CMU) Mandeepa Mukherjee (IIIT Delhi) Vikram Kamath Cannanure (HCII, CMU) Jingyang Liu (School of Architecture, CMU) Saiganesh Swaminathan (HCII, CMU) Siyan Zhao (HCII, CMU) Fannie Liu (HCII, CMU)
Organizing Committees	General Conference Chair, UIST 2024 Gadgets Chair, UbiComp 2017 Workshops and Tutorials Chair, UbiComp 2019
Editorial Board	IMWUT 2017-2023

Program Committees	MobiSys 2021 CHI 2017, 2018, 2021, 2022 UIST 2019-22 MobiCom 2019, 2020, 2022 COMPASS 2019 IUI 2018 UbiComp 2016
Outreach	Shadyside Academy, Pittsburgh 2018-2021. Summer internship advisor. Winchester Thurston, Pittsburgh Final Projects 2020. Project Advisor. Girls Who Code Summer Program 2015. Guest Speaker. UW UbiComp Lab Internship 2013-2015. Program Coordinator. UW CSE Open House. 2012-2015. Volunteer UW College of Engineering Discovery Days 2013-2015. Volunteer
Tutorials/ Training	*Bridging the Gap: Machine Learning for UbiComp* UbiComp 2015. *Mobile Application Development in J2ME.* University of Ghana, Legon, Ghana. Summer 2008.

PATENTS

Granted	System and method for acoustic activity recognition. Gierad Laput, Karan Ahuja, Mayank Goel, Chris Harrison US 11,069,334 Device communication system with proximity synchronization mechanism and method of operation thereof. Mayank Goel, Stacie Hibino US 9179243 B2 / EP3079440A1, US 20150163618 Sound-based spirometric devices, systems, and methods Eric Larson, Mayank Goel, Shwetak Patel PCT/ US2014/400,064 Systems, devices, and methods for estimating bilirubin levels James A. Taylor, Shwetak N. Patel, James W. Stout, Lilian De Greef, Mayank Goel, Eric C. Larson US20150359459A1 Use of hand posture to improve text entry Mayank Goel, Jacob O. Wobbrock, Shwetak Patel, Leah Findlater PCT/US2013/074428
Pending	System and method using light sources as spatial anchors. Karan Ahuja, Sujeath Pareddy, Robert Xiao, Chris Harrison, Mayank Goel USPatentApp.US16/868,061 Electronic system with surface detection mechanism and method of operation thereof Mayank Goel, Stacie Hibino, James Begole PCT/KR2013/006697 Apparatus communication system equipped with proximity sychronization mechanism and method for operating same Mayank Goel, Stacie Hibino PCT/KR2014/011660

Methods and systems for managing multi-device interaction using the doppler effect
Sidhant Gupta, Shwetak Patel, Tanvir Islam Aumi, Mayank Goel, Eric Larson
PCT/US2014/049175

SELECTED PRESS

General	**ACM.** People of ACM: Mayank Goel. September 2017.
IMUPoser	**Gizmodo.** You could soon move around in VR with an iPhone, an Apple Watch, some AirPods. May 2023.
SAMOSA	**Edge Impulse.** SAMoSA is a novel human activity recognition system that combines 50 Hz IMU data and audio sampled at ≤ 1 kHz to predict daily activities with 92.2% accuracy. December 2022.
Depression Measurement	**Managed Healthcare Executive.** Machine Learning Predicts MS Mental Health During Stay-at-Home Orders. November 2022.
Eye-MU	**ACM CACM** The Eyes Have It**.** **TechCrunch.** Controlling your phone with your eyes**.**
Vid2Doppler	**Pittsburgh Post-Gazette.** As smart technology expands, focus is on privacy safeguards. **TechCrunch.** CMU researchers show potential of privacy-preserving activity tracking using radar.
Pose on the Go	**Cult of Mac.** Full-body Animoji? Smart tech uses iPhone camera to track body motion.
Direction of Voice	**Engadget.** AI could tell smart speakers what direction your voice is coming from 2020 **Hackaday.** Robots can finally answer, are you talking to me? **The Register.** Hey, over here, I'm talking. Academics help computers figure out which way you're facing when you speak.
FitByte	**New Atlas.** FitByte glasses designed to keep an eye on your diet. April 2020. **hackster.io.** FitByte Monitors Diets Using Sensors Mounted on Glasses. April 2020.
Digital Ventriloquism	**Gizmodo.** This Smart Speaker Prototype Can Throw Its Voice Like a Ventriloquist. April 2020. **hackster.io.** "Digital Ventriloquism" Brings Interactivity to Otherwise Silent Objects Through Clever Projection. April 2020.
Eyes on the Road	**ZDNet.** A novel solution to curb phone use by drivers. April 2020.
GymCam	**HackADay.** GymCam knows exactly that you've been doing in the gym. September 2019. **ACM Tech News.** GymCam tracks exercises that wearable monitors cannot. September 2019. **Medgadget.** GymCam automatically classifies, counts exercise reps. September 2019.
Ubicoustics	**Futurity.** Sound and vibrations let smart devices know where they are. October 2018. **Tech Crunch.** This robot uses lasers to 'listen' to its environment. October 2018.
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