

Dhruv Jain

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Education





- 2017 – **UNIVERSITY OF WASHINGTON, SEATTLE**
PhD, Computer Science and Engineering
[GPA: 3.95/4.0, Advisors: Jon Froehlich, Leah Findlater](#)
- 2014 – 2016 **MIT MEDIA LAB**
Masters, Media Arts and Sciences
[GPA: 5.0/5.0, President of the MIT Scuba Club](#)
- 2009 – 2013 **INDIAN INSTITUTE OF TECHNOLOGY, DELHI**
Undergraduate, Computer Science and Engineering
[GPA: 9.23/10.0, Class Rank: 3/81, **best undergraduate thesis**](#)







Employment

- Summer '21 **APPLE**
Research Intern
[Mentors: Jeffrey Bigham, Colin Lea](#)
- Winter '21 **GOOGLE**
Research Intern
[Mentor: Alex Olwal](#)
- Summer '20 **MICROSOFT RESEARCH**
Research Intern
[Mentors: Meredith Ringel Morris, Sasa Junuzovic](#)
- Summer '14 **UNIVERSITY OF MARYLAND, COLLEGE PARK**
Research Intern
[Advisors: Jon Froehlich, Leah Findlater](#)
- Fall '13 **MICROSOFT RESEARCH, INDIA**
Research Intern
[Mentors: Kalika Bali, Ed Cutrell](#)
- Summer '13 **DAVID & LUCILE PACKARD FOUNDATION**
Intern
[Manager: Aaditeshwar Seth](#)
- Summer '12 **UNIVERSITY OF WISCONSIN, MADISON**
Research Intern
[Advisor: Vinay Ribeiro](#)
- Winter '12 **STANFORD INDIA BIODESIGN**
Visiting Researcher
[Mentors: Pragun Goyal, Mayank Kumar](#)

Publications

- 2021 ³ **WHAT DO WE MEAN BY "ACCESSIBILITY RESEARCH"? A SYSTEMATIC REVIEW OF ACCESSIBILITY PAPERS IN CHI AND ASSETS FROM 1994 TO 2019**
Mack, McDonnell, **Jain**, Wang, Froehlich, Findlater
[ACM CHI 2021](#)
- 2021 ² **2021 SIG ON ACCESS IN SIGCHI**
Hoffman, Bennett, Feng, **Jain**, Ladner, Mankoff
[ACM CHI 2021 \(SIG Proposal\)](#)
- 2021 ¹ **FROM THE MARGINS TO THE CENTRE: DEFINING NEW MISSION AND VISION FOR HCI RESEARCH IN SOUTH**

- ASIA**
Jain, Ibtasam, Sharma, Bhattacharya, Tuli, Gamage, **Jain**, Tulsakar, Chandra, Razaq, Rony, Padhi, Jain, Shahid, Ahmed, Balkrishan, Singh
[ACM CHI 2021 \(Workshop Proposal\)](#)
- 2020
6 **HOLOSOUND: COMBINING SPEECH AND SOUND IDENTIFICATION FOR DEAF OR HARD OF HEARING USERS ON A HEAD-MOUNTED DISPLAY**
Guo, Yang, Kuang, Bin, **Jain**, Goodman, Findlater, Froehlich
[ACM ASSETS 2020 \(Poster\)](#)
 **UW Reality Lab Grant (\$50k)**
- 5 **FIELD STUDY OF A TACTILE SOUND AWARENESS DEVICE FOR DEAF AND HARD OF HEARING USERS**
Jain, Chiu, Goodman, Schmandt, Findlater, Froehlich
[ACM ISWC 2020](#)
- 4 **SOUNDWATCH: EXPLORING SMARTWATCH-BASED DEEP LEARNING APPROACHES TO SUPPORT SOUND AWARENESS FOR DEAF AND HARD OF HEARING USERS**
Jain, Ngo, Patel, Goodman, Findlater, Froehlich
[ACM ASSETS 2020](#)
 **best artifact award; extensive press coverage**
- 3 **NAVIGATING GRADUATE SCHOOL WITH A DISABILITY: A TRIO-ETHNOGRAPHY**
Jain, Potluri, Sharif
[ACM ASSETS 2020](#)
 **best paper honorable mention, most liked video on YouTube**
- 2 **HOMESOUND: AN ITERATIVE FIELD DEPLOYMENT OF AN IN-HOME SOUND AWARENESS SYSTEM FOR DEAF OR HARD OF HEARING USERS**
Jain, Mack, Amrous, Wright, Goodman, Findlater, Froehlich
[ACM CHI 2020](#)
- 1 **EVALUATING SMARTWATCH-BASED SOUND FEEDBACK FOR DEAF AND HARD-OF-HEARING USERS ACROSS CONTEXTS**
Goodman, Kirchner-Adelhardt, Guttman, **Jain**, Froehlich, and Findlater
[ACM CHI 2020](#)
- 2019
4 **AUTOETHNOGRAPHY OF A HARD OF HEARING TRAVELER**
Jain, Desjardins, Findlater, and Froehlich
[ACM ASSETS 2019](#)
 **best paper honorable mention**
- 3 **SOCIAL TENSIONS WITH HEAD-MOUNTED DISPLAYS FOR ACCESSIBILITY**
Goodman, **Jain**, Froehlich, Craft, and Findlater
[ACM CHI 2019 \(Workshop\)](#)
- 2 **EXPLORING SOUND AWARENESS IN THE HOME FOR PEOPLE WHO ARE DEAF OR HARD OF HEARING**
Jain, Lin, Guttman, Amalachandran, Zeng, Findlater, and Froehlich
[ACM CHI 2019](#)
- 1 **DEAF AND HARD-OF-HEARING INDIVIDUALS' PREFERENCES FOR WEARABLE AND MOBILE SOUND AWARENESS**
Findlater, Chinh, **Jain**, Froehlich, Kushalnagar, and Lin
[ACM CHI 2019](#)
- 2018
2 **TOWARDS ACCESSIBLE CONVERSATIONS IN A MOBILE CONTEXT FOR PEOPLE WHO ARE DEAF AND HARD OF HEARING**
Jain, Franz, Findlater, Cannon, Kushalnagar, and Froehlich
[ACM ASSETS 2018](#)
- 1 **EXPLORING AUGMENTED REALITY APPROACHES TO REAL-TIME CAPTIONING: A PRELIMINARY AUTOETHNOGRAPHIC STUDY**
Jain, Chinh, Findlater, Kushalnagar, and Froehlich
[ACM DIS 2018 \(Poster\)](#)
- 2016 **IMMERSIVE SCUBA DIVING SIMULATOR USING VIRTUAL REALITY**

- 4 **Jain, Sra, Gro, Marques, Wu, Chiu, and Schmandt**
ACM UIST 2016
 MIT council of arts grant (\$4k), extensive press coverage
- 3 **RESOLVING SPATIAL VARIATION AND ALLOWING SPECTATOR PARTICIPATION IN MULTIPLAYER VR**
 Sra, Jain, Caetano, Calvo, Hilton, and Schmandt
ACM UIST 2016 (Poster)
- 2 **IMMERSIVE TERRESTRIAL SCUBA DIVING USING VIRTUAL REALITY**
 Jain, Sra, Gro, Marques, Wu, Chiu, and Schmandt
 **ACM CHI 2016 (Ext. Abs.)**
 extensive press coverage
- 1 **TOWARDS INTERACTIVE FORCE-SENSITIVE DIGITALLY ENCODED MATERIALS FOR ARCHITECTURAL MODELS AND CONSTRUCTION**
 Jain, Babbitt, Canning, and Willmer-Shiles
ACM CHI 2016 (Workshop)
- 2015 **JOGCALL: PERSUASIVE SYSTEM FOR COUPLES TO JOG TOGETHER**
 2 Jain, and Schmandt
PERSUASIVE 2015
- 1 **HEAD-MOUNTED DISPLAY VISUALIZATIONS TO SUPPORT SOUND AWARENESS FOR THE DEAF AND HARD OF HEARING**
 Jain, Findlater, Gilkeson, Holland, Duraiswami, Zotkin, Vogler, and Froehlich
ACM CHI 2015
 Google faculty research award (\$90k), NSF grant (\$1.2m), UW reality lab grant (\$90k)
- 2014 **PILOT EVALUATION OF A PATH-GUIDED INDOOR NAVIGATION SYSTEM FOR VISUALLY IMPAIRED IN A PUBLIC MUSEUM**
 2 Jain
ACM ASSETS 2014 (Poster)
- 1 **PATH-GUIDED INDOOR NAVIGATION FOR THE VISUALLY IMPAIRED USING MINIMAL BUILDING RETROFITTING**
 Jain
ACM ASSETS 2014
 Samsung university relations grant (\$25k), IIT Delhi alumni award (₹200k), best bachelors thesis (₹10k), extensive press coverage
- 2013 **PATH-GUIDED AUDIO BASED INDOOR NAVIGATION SYSTEM FOR PERSONS WITH VISUAL IMPAIRMENT**
 3 Jain, Jain, Paul, Komarika, and Balakrishnan
ACM ASSETS 2013
 extensive press coverage
- 2 **APPLICATION OF SHAPE MEMORY ALLOY BASED ACTUATION FOR REFRESHABLE DISPLAY OF BRAILLE**
 Singhal, Jain, Chanana, Jain, Paul, Balakrishnan, and Rao
ASME/IEEE MESA 2013
- 1 **WHITESPACE NETWORKS FOR VEHICULAR COMMUNICATION**
 Jain, Gupta, Gautam, Kumar, Ribeiro, and Sharma
COMSNETS 2013 (Poster)
- 2012 **DESIGN AND USER STUDY OF AN AFFORDABLE CELLPHONE BASED INDOOR NAVIGATION SYSTEM FOR VISUALLY IMPAIRED**
 1 Jain, Agrawal, Maheshwari, Mittal, Balakrishnan, Rao, and 11 others
TRANSED 2012
 best paper award, extensive press coverage

Products and Open Source Releases

- Oct 2020 **SOUNDWATCH: SMARTWATCH SOUND RECOGNITION APP**
 Released on [Google Play Store](#)
 300+ downloads to date.
- Aug 2020 **SOUNDWATCH: SMARTWATCH SOUND RECOGNITION CODEBASE**
 Available on [Github](#)

Jul 2020 **HOLOSOUND: AUGMENTED REALITY SOUND AWARENESS CODEBASE**
Available on [Github](#)

Mar 2013 **ROSHNI: INDOOR NAVIGATION SYSTEM FOR VISUALY IMPAIRED**
Installed in National Science Museum, India
76,000+ users to date.

Academic Service

2022 **ACCESSIBILITY CO-CHAIR**
ACM CHI 2022

2021 **ACCESSIBILITY CO-CHAIR**
ACM UIST 2021

2021 **PUBLICITY CO-CHAIR**
ACM ASSETS 2021

2020 **PROGRAM COMMITTEE – POSTERS & DEMOS CO-CHAIR**
ACM ASSETS 2020

2020 **PROGRAM COMMITTEE – ASSOCIATE CHAIR (AC)**
ACM CHI 2020 LBW

2019 **ACCESSIBILITY CO-CHAIR**
ACM ASSETS 2019

2019 **DESIGN & WEB CO-CHAIR**
ACM UIST 2019

2016 – **REVIEWER (50+ PAPERS)**
CHI '16 '17 '18 '19 '20, '21; UIST '17 '18 '19 '20; CSCW '21; TACCESS '18, '20; IEEE VR '20; Mobile HCI '20 '21; ISWC '20; TEI '21

Teaching and Leadership Experience

2013 – **WORLDWIDE EDUCATION OUTREACH INITIATIVES**
Faculty and organizing member of DIY workshops in India ('13 '14 '15 '16, sponsored by MIT, TechTop, Samsung, ICICI Bank), South Africa ('15, sponsored by KwaZulu-Natal), Mexico ('16, sponsored by CDC Mexico), and France ('17, sponsored by Grenoble École de Management)

2012 – **TEACHING ASSISTANT**
University of Washington Seattle (Spring '18 – HCI, Fall '17 – HCI), MIT (Fall '15 – Principles of Assistive Technology), IIT Delhi (Spring '13 – Digital Hardware Design, Fall '12 – Embedded Systems)

2011 – 2014 **MIT SCUBA CLUB**
President ('15-'16), Vice President ('14-'15)

2014 – 2016 **MIT AND IIT DELHI ASSISTIVE TECHNOLOGY CLUBS**
Co-Director of MIT AT Club ('14-'16), Treasurer of MIT ASL Club ('16), Co-Founder of IIT Delhi AT Club ('12-'14)

Selected Awards and Honors

2020 **BEST ARTIFACT AWARD**
At ACM ASSETS 2020 for the "SoundWatch" app

2020 **BEST PAPER HONORABLE MENTION**
At ACM ASSETS 2020 for the paper: Navigating Graduate School with a Disability

2020 **MOST LIKED VIDEO ON YOUTUBE**
During ACM ASSETS 2020 for the project: Navigating Graduate School with a Disability

2019	MADRONA PRIZE RUNNER UP During Industry Affiliates at the University of Washington for the project: In-Home Sound Awareness
2019	PEOPLE'S CHOICE AWARD During Industry Affiliates at the University of Washington for the project: In-Home Sound Awareness
2019	BEST PAPER HONORABLE MENTION At ACM ASSETS 2020 for the paper: Autoethnography of a Hard of Hearing Traveler
2018	PEOPLE'S CHOICE AWARD During Industry Affiliates at the University of Washington for the project: Augmented Reality Captioning
2015 – 2016	GOOGLE LIME SCHOLAR Among 12 disabled students selected in the US for this prestigious scholarship (\$10,000)
2015	BEST PROPOSAL, MIT ICAMPUSPRIZE Presented for a vision to make MIT campus more accessible to people with disabilities (\$3,500)
2013	BEST BACHELORS THESIS Among 250+ students in IIT Delhi class of 2013 (cash prize of INR 200,000).
2012	BEST PAPER AWARD At TRANSED 2012 for the paper: An Affordable Cellphone Based Indoor Navigation System for Visually Impaired
2012 – 2013	BEST RESEARCH PROJECT IN SEVERAL NATIONAL COMPETITIONS Govt. of India Budding Innovators Award 2013, Govt. of India Young Innovators Award 2012, IBM Research Academic Exchange Award 2013, IBM Research Academic Exchange Award 2012, Quest Global Inc. Ingenuity Award 2013, all awarded for the project Roshni: Indoor Navigation System for Visually Impaired Users.
2009	ALL INDIA RANK 1 IIT Joint Entrance Exam (IIT-JEE), disabled category

Invited Talks

Mar 2020	SOUND SENSING AND FEEDBACK FOR DEAF AND HARD OF HEARING USERS Birla Institute of Technology and Sciences Pilani, Hyderabad, India
Feb 2020	SOUNDWATCH: SMARTWATCH-BASED SOUND RECOGNITION FOR DEAF AND HARD OF HEARING USERS University of Washington Speech and Hearing Center, Seattle, Washington
Nov 2020	NAVIGATING GRADUATE SCHOOL WITH A DISABILITY Microsoft Research, Redmond, Washington
Feb 2020	WHAT IS GRADUATE SCHOOL LIKE FOR STUDENTS WITH DISABILITIES? Massachusetts Institute of Technology, Boston, Massachusetts
Jan 2016	APPLICATIONS OF SCUBA DIVING SIMULATOR FOR THE NAVY United States Navy, Boston, Massachusetts
Aug 2017	INCLUSIVE DESIGN Indian Institute of Technology, Delhi, India
Nov 2013	INNOVATIONS IN ACCESSIBILITY FOR PEOPLE WITH VISUAL IMPAIRMENT Microsoft Research, Bangalore, India

Grants

Apr 2020	UW REALITY LAB GRANT – \$50,000 Moving Beyond Speech: Designing New Sound Feedback Visualizations for Deaf and Hard of Hearing Users Dhruv Jain , Jon E. Froehlich , Leah Findlater
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Oct 2015	MIT COUNCIL OF ARTS GRANT – \$4,000 Simulate Scuba Diving Using Virtual Reality Dhruv Jain, Chris Schmandt
Aug 2015	MIT MEDIA LAB ADHOC GRANT – \$1,500 To organize the first American Sign Language class at MIT
Jun 2015	MIT PUBLIC SERVICE CENTER GRANT – \$1,600 Wearable Devices to Support Sound Awareness for Deaf and Hard of Hearing Users Dhruv Jain
May 2014	SAMSUNG UNIVERSITY RELATIONS GRANT – \$25,000 Indoor Navigation System for the Visually Impaired Using Minimal Building Retrofitting M. Balakrishnan, P.V.M. Rao, Dhruv Jain

Students Mentored

2020 –	Khoa (Kaynor) Nguyen , Undergraduate, Computer Science and Engineering, UW (currently at UW)
2020 –	Rachel Grossman-Kahn , Freelance user experience designer
2019 –	Ru Guo , Undergraduate, Computer Science and Engineering, UW (currently at UW)
2019 –	Yiru Yang , Undergraduate, Computer Science and Engineering, UW (currently at UW)
2019 – 2020	Xu Bin , Masters, HCI+D, UW (currently at UW)
2018 – 2020	Venkatesh Potluri , Ph.D., Computer Science and Engineering, UW (currently at UW)
2019 – 2020	Hung Ngo , Undergraduate, Computer Science and Engineering, UW (currently at Amazon)
2019 – 2020	Kelly Mack , Ph.D., Computer Science and Engineering, UW (currently at UW)
2019	Akli Amrous , High School Student, Bishop Blanchet (currently at Bishop Blanchet)
2018	Angela Carey Lin , High School Student, Seattle Prep (currently undergraduate at U Penn)
2015 – 2016	Jingru Guo , Undergraduate, Rhode Island School of Design (currently at Amazon)
2015 - 2018	Anand Parikh , Undergraduate, IIT Madras (currently CEO of Shira MedTech)
2014 – 2015	Brendon Chiu , Undergraduate, Mechanical Engineering, MIT (currently at Virgin Orbit)
2014 – 2015	Eric Manzi , Undergraduate, Computer Science, MIT (currently at Facebook)
2014	Rohit Satija , Masters, Biotechnology, IIT Delhi (currently PhD at UT Austin)
2013 – 2014	Arjun Bhatia , Undergraduate, IIT BHU (currently a freelance author)

Selected Press Articles

Dec 2020	The Week , An app that alerts people to sounds (<i>in print only</i>)
Nov 2020	Science News , A smartwatch app alerts users with hearing loss to nearby sounds
Oct 2020	Forbes , Smartwatch App Notifies Deaf And Hard Of Hearing People Of Sounds
Oct 2020	New Atlas , SoundWatch alerts deaf and hard-of-hearing people to important sounds
Oct 2020	Yahoo News , Scientists Develop Smartwatch that Alerts Hearing-impaired Persons of Nearby Sounds
Oct 2020	CNN – News18 , Scientists Develop Smartwatch that Alerts Hearing-impaired Persons of Nearby Sounds
Oct 2020	E&T Magazine , Smartwatch app alerts deaf people to everyday sounds
Oct 2020	Futurity , Watch App Identifies Sounds for Deaf and Hard-of-Hearing People
Oct 2020	New Atlas , SoundWatch alerts deaf and hard-of-hearing people to important sounds
Oct 2020	Medgadget , SoundWatch Alerts Deaf Users of Nearby Activity
Oct 2020	UW News , SoundWatch: New smartwatch app alerts DHH users to birdsong, sirens and other desired sounds
Nov 2019	GeekWire , A smart ring for AR, real-time AI for healthcare, and more UW tech innovations
Nov 2019	BusinessWire , Madrona Awards 2019
Nov 2018	GreekWire , From fighting Alzheimer’s to AR captions, UW CSE students show cutting-edge innovations
Aug 2016	Quartz , The invention of the scuba simulator can transform the way humans think about the ocean
May 2016	Business Insider , MIT’s virtual scuba simulator makes you feel like you are really underwater
Apr 2016	MIT Tech Review , Disability-Simulating VR Promotes Empathy
Apr 2016	ACM TechNews , Experiencing Underwater Worlds, Virtually
Apr 2016	BostInno , VR on Steroids: This 3D Simulator Makes Your Entire Body Feel Like You’re Scuba Diving
Apr 2016	R&D World , Scuba Dive Without Getting Wet
Apr 2016	Phys.org , SCUBA simulator advances VR research while exploring the relationship between diving and disability
Apr 2016	ECN Mag , SCUBA simulator advances the field of virtual reality
Apr 2016	Azo Sensors , Amphibian SCUBA Diving Simulator Lets Abled People Experience Underwater World
Mar 2016	MIT News , Experiencing underwater worlds, virtually
Jul 2015	MIT News , Vision for a more accessible MIT campus
Oct 2014	Metro (UK) , Infrared guidance for the blind (<i>in print only</i>)
Oct 2014	New Scientist , Light beacons let map app talk to blind people
Jan 2014	Hindustan Times , A seeing eye app for indoor use
Dec 2013	Electronics for You , Roshni - Indoor Navigation System for visually impaired

Jul 2014	Deccan Herald, No dearth of avenues
Jun 2013	Times of India, Winners of 'QuEST Ingenium 2013' announced
Dec 2012	Deccan Herald, Working to beat disability
Apr 2012	Dainik Bhaskar, IIT's invention: Blind people will reach their destination without any help
Apr 2012	Hindustan Times, A taste of future with students of IIT Delhi
Apr 2012	Indian Express, IIT showcases camouflage tech, multiple-user screens
May 2009	Times of India, Father helped him with notes, he heard the call
May 2007	The Hindu, Disabled boy scores 95% (<i>in print only</i>)
May 2007	Hindustan Times, Overcoming odds to reach the top