

# Janet G. Johnson

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## Education

### University of California, San Diego

PHD IN COMPUTER SCIENCE (MS-PHD TRANSFER IN 2018) / HUMAN COMPUTER INTERACTION, 3.82/4

*La Jolla, CA, USA*

*Sept. 2016 - PRESENT*

### Manipal Institute of Technology, Manipal University

B.E. IN COMPUTER SCIENCE AND ENGINEERING, 8.79/10

*Manipal, India*

*Jul. 2010 - Jun. 2014*

## Research Experience

### Human-centered eXtended Intelligence Lab & The Design Lab, UC San Diego

RESEARCHER, PHD CANDIDATE (DISSERTATION FOCUS: MIXED REALITY MEDIATED COLLABORATION)

*La Jolla, CA, USA*

*Apr. 2017 - PRESENT*

#### Dissertation Work

- Developing a communication and cognition first model for Mixed Reality mediated collaboration.
- Designed and evaluated multiple interaction techniques that exploit XR's spatial affordances to better support remote guidance.
- Evaluated XR-mediated real-time guidance for trauma surgery against current telementoring practices through cadaver studies.
- Designed an XR telementoring environment for open surgery (collaboration with the Naval Medical Center at San Diego).
- Co-designed and evaluated HoloCPR, a Mixed Reality application that provides real-time resuscitation (CPR) aid for novices.

#### Other Projects

- Aided the design of a mixed fidelity prototyping and authoring tool in Mixed Reality that exploits situated sketching.
- Conducted preliminary research towards creating a context aware voice-based digital assistant for older adults.
- Uncovered needs and designed a mobile intervention to improve patient-centered communication in primary care.
- Conducted longitudinal research to understand latent needs and develop a framework for family-centered interventions in the ICU.
- Employed design ethnography to understand the communication and interaction patterns among different stakeholders in an ICU.

### XR Safety Initiative

MEDICAL XR RESEARCH ADVISOR (2022), RESEARCH COLLABORATOR (2021-2022)

*Remote*

*June. 2021 - PRESENT*

- Leading a multi-team research effort towards creating guidelines for safe and ethical XR applications in healthcare.
- Conducted research towards understanding current global practices towards creating XR applications in healthcare.

### ReCODE Health, UC San Diego

GRADUATE COLLABORATORY FELLOW (RESEARCH)

*La Jolla, CA, USA*

*Oct. 2016 - Jan. 2018*

- Conducted research towards understanding the trends of digital health research based on IRB forum posts.
- Responsible for user research and evaluation for the CORE platform.

### School of Medical Science and Technology, Indian Institute of Technology

RESEARCH INTERN

*Kharagpur (IIT-KGP), India*

*Jun. 2013 - Jul. 2013*

- Segmented Magnetic Resonance Images (MRI) to enable brain tumor detection and isolation.
- Employed rough set filtering, edge detection and unsupervised clustering.
- Successfully isolated tumor(s) in MR Images with 78% accuracy.

## Professional Experience

### Facebook Reality Labs, Facebook Inc

UX RESEARCH INTERN

*Seattle, WA, USA*

*Jun. 2020 - Sept. 2020*

- Conducted research to inform future AR technology with a focus on spatial and audio capabilities for AR glasses.

## Facebook AR/VR, Facebook UK Limited

London, UK

UX RESEARCH INTERN

Jun. 2019 - Sept. 2019

- Conducted qualitative UX research on AR authoring and the Spark AR ecosystem to inform future product and research directions.

## PricewaterhouseCoopers & UC San Diego

La Jolla, CA, USA

UX RESEARCH & DESIGN INTERN

Jun. 2017 - Sept. 2017

- Responsible for the UX research and design of a collaborative Mixed Reality application to visualize and interact with population health insights that drive policy-making.

## Microsoft India (R&D) Pvt. Ltd.

Hyderabad, India

SOFTWARE ENGINEER

Jul. 2014 - Jul. 2016

- Designed an interface and developed angular components for an e-commerce site for Microsoft partners.
- Created a tool to identify stressed devices on the Microsoft Corporate Network, reducing the time from 6-8 hrs to approx. 6 minutes.
- Helped formulate business-unit level budget plan, created vendor contracts, and tracked and managed data-center projects as part of a program management stint.

## Juniper Networks India Pvt. Ltd.

Bangalore, India

ENGINEERING INTERN

Jan. 2014 - Jun. 2014

- Designed a framework to enhance the debugging capabilities of EX-Series Platform Forwarding Engine.
- Made additions to JUNOS to pull relevant information from the Routing Engine, PFE and chipset of the switch.
- Reduced time to obtain the above-mentioned information from 30 minutes and 18 seconds to 12.7 seconds.

## Publications

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- M.D. Tadlock, E.J. Olson, D. Gasques, R. Champagne, M.J. Krzyzaniak, S.A. Belverud, V. Ravindra, J. Kerns, P. M Choi, J. Deveraux, **J. Johnson**, T. Sharkey, M. Yip, N. Weibel, K. Davis. "Mixed reality surgical mentoring of combat casualty care related procedures in a perfused cadaver model: Initial results of a randomized feasibility study", In Surgery 2022.
- **Janet G. Johnson**, Danilo Gasques, Tommy Sharkey, Evan Schmitz, and Nadir Weibel. "Do You Really Need to Know Where "That" Is? Enhancing Support for Referencing in Collaborative Mixed Reality Environments", In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems.
- Danilo Gasques, **Janet G Johnson**, Tommy Sharkey, Yuanyuan Feng, Ru Wang, Zhuoqun Robin Xu, Enrique Zavala, Yifei Zhang, Wanze Xie, Xinming Zhang, Konrad Davis, Michael Yip, and Nadir Weibel. "ARTEMIS: A Collaborative Mixed-Reality System for Immersive Surgical Telementoring", In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems.
- Chen Chen, **Janet G Johnson**, Kemeberly Charles, Alice Lee, Ella T. Lifset, Michael Hogarth, Alison A. Moore, Emilia Farcas, and Nadir Weibel. "Understanding Barriers and Design Opportunities to Improve Healthcare and QOL for Older Adults through Voice Assistants", In Proceedings of ASSETS 2021, International ACM SIGACCESS Conference on Computers and Accessibility.
- W. Xie, Y. Liang, **J. Johnson**, A. Mower, S. Burns, C. Chelini, P. D'Alessandro, N. Weibel, and J.P. Schulze. "Interactive Multi-User 3D Visual Analytics in Augmented Reality", In Proceedings of IS&T International Symposium on Electronic Imaging 2020.
- Nadir Weibel, Danilo Gasques Rodrigues, **Janet G. Johnson**, Thomas Sharkey, Zhuoqun Xu, Xinming Zhang, Michael Yip, and Konrad Davis. "ARTEMIS: Mixed-Reality Environment for Immersive Surgical Telementoring", In Proceedings of the 2020 CHI Conference Extended Abstracts on Human Factors in Computing Systems.
- **Janet G. Johnson**, Khalil Mrini, Michael Hogarth, Alison Moore, Ndapa Nakashole, Nadir Weibel, and Emilia Farcas. "Voice-Based Conversational Agents for Older Adults", Position Paper at Conversational Agents for Health and Wellbeing, CHI 2020.
- K.L. Davis, D. Gasques, Y.Zhang, W. Xie, **J. Johnson**, Y. Feng, Z. Xu, J. Riback, T. Sharkey, M. Yip, N. Weibel. "ARTEMIS, Augmented Reality Technology to Enable reMote Integrated Surgery: A Review of Technical Consideration and Study Design", 2019 Military Health System Research Symposium (MHSRS 2019), Orlando Florida, August 2019.

- **Janet G. Johnson**, Evan Schmitz, Venkatesh Ramnath, and Nadir Weibel. "Nurture-Empower-Support: A Human-Centered Approach to Understand and Support ICU Families", In Proceedings of The 13th EAI International Conference on Pervasive Computing Technologies for Healthcare, pp. 119-128. ACM, 2019.
- Thomas Sharkey, **Janet G. Johnson**, Danilo Gasques, and Nadir Weibel. "I Want to Be a Surgeon! Role Playing for Remote Surgery in Mixed Reality", In Proceedings of WISH 2019, Workshop on Interactive System for Healthcare, CHI 2019.
- Danilo Gasques Rodrigues, **Janet G. Johnson**, Thomas Sharkey, and Nadir Weibel. "PintAR: Sketching Spatial Experiences in Augmented Reality", In the Designing Interactive Systems Conference 2019 Companion, pp. 17-20. ACM, 2019.
- **Janet G. Johnson**, Evan Schmitz, Venkatesh Ramnath, and Nadir Weibel. "Designing Family-Centered Aids for the ICU", In Proceedings of the 2019 CHI Conference Extended Abstracts on Human Factors in Computing Systems.
- Danilo Gasques Rodrigues, **Janet G. Johnson**, Thomas Sharkey, and Nadir Weibel. "What You Sketch Is What You Get: Quick and Easy Augmented Reality Prototyping with PintAR", In Proceedings of the 2019 CHI Conference Extended Abstracts on Human Factors in Computing Systems.
- **Johnson, Janet G.**, Danilo Gasques Rodrigues, Madhuri Gubbala, and Nadir Weibel. "HoloCPR: Designing and Evaluating a Mixed Reality Interface for Time-Critical Emergencies", In Proceedings of the 12th EAI International Conference on Pervasive Computing Technologies for Healthcare, pp. 67-76. ACM, 2018.
- Rodrigues, Danilo Gasques, **Janet G. Johnson**, and Nadir Weibel. "Real-time guidance for cardiopulmonary resuscitation in Mixed Reality", Pervasive Health 2018 (demo)

## Teaching Experience

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### **Towards Human-Centered AI, UC San Diego**

*La Jolla, CA, India*

TEACHING STAFF

2022

- Co-designing and creating the curriculum for a Masters course on human-centered AI.

### **CSE 118/218 - Ubiquitous Computing, UC San Diego**

*La Jolla, CA, India*

TEACHING ASSISTANT

2017, 2018, & 2019

- This course explores ubiquitous computing through both paper readings and a quarter-long project with a focus on mixed reality.
- Responsible for holding discussion sessions, some lectures, and mentoring teams on mixed reality projects.

### **CSE 190/291 - Human-Computer Interaction for Health (HCI4H), UC San Diego**

*La Jolla, CA, India*

TEACHING ASSISTANT

2019, 2021 & 2022

- This course explores the challenges of designing and introducing new interactive and sensing technology to healthcare.
- Responsible for mentoring students, grading, and logistics of the course.

### **Interaction Design Specialization, Coursera**

*La Jolla, CA, India*

TEACHING STAFF

Sept. 2017 - Aug. 2019

- This specialization teaches fundamentals for designing, implementing, and evaluating user interfaces.
- Managed the logistics and course material for the eight courses that make up the specialization.

### **COGS 160 - Advanced Interaction Design, UC San Diego**

*La Jolla, CA, India*

TEACHING ASSISTANT

Apr. 2017 - Jun. 2017

- This course introduces social computing, interaction techniques and information design in a bi-weekly studio format.
- Helped conduct classes, held office hours, and was responsible for the grading and logistics of the class.

## Honors and Responsibilities

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### TALKS, DEMOS, AND PRESENTATIONS

- 2022 **Research Methods in HCI**, The Design Lab internship lecture series *La Jolla, CA, USA*
- 2021 **Remote Collaboration in XR**, Filene's big.bright.minds. *Irvine, CA, USA*
- 2019 **Introduction to Augmented Reality**, Women in STEM, San Diego Science & Engineering Fair *San Diego, CA, USA*
- 2018 **Mixed Reality and HCI Research**, Harvey Mudd Research Open House *Claremont, CA, USA*
- 2017 **Video Games to the Rescue!**, Fleet Science Center *San Diego, CA, USA*

### ACADEMIC SERVICE

- 2022 **Track Chair**, Medical XR and Immersive Healthcare, Metaverse Safety Week
- 2022 **Organizer**, Workshop on Empathic Computing at IEEE VR: Conference on Virtual Reality and 3D User Interfaces
- 2020 **Web Co-Chair**, ACM International Joint Conference on Pervasive and Ubiquitous Computing & International Symposium on Wearable Computers

### ACADEMIC PEER REVIEWS

- 2022 **Papers**, CHI PLAY:Annual Symposium on Computer-Human Interaction in Play
- 2022 **Late Breaking Works**, CHI: Conference on Human Factors in Computing Systems
- 2022 **Papers**, CSCW: Conference on Computer Supported Cooperative Work and Social Computing
- 2022 **Papers**, IEEE VR:Conference on Virtual Reality and 3D User Interfaces
- 2022 **Papers**, MobileHCI: Conference on Mobile Human-Computer Interaction
- 2022 **Papers**, TEI:Conference on Tangible, Embedded and Embodied Interaction
- 2021 **Papers**, CHI: Conference on Human Factors in Computing Systems
- 2021 **Papers**, ISWC: International Symposium on Wearable Computers
- 2021 **Papers**, SUI:Symposium on Spatial User Interaction
- 2021 **Papers**, VRST:Symposium on Virtual Reality Software and Technology
- 2020 **Papers**, CHI: Conference on Human Factors in Computing Systems
- 2020 **Late Breaking Works**, CHI: Conference on Human Factors in Computing Systems
- 2018 **Late Breaking Works**, CHI: Conference on Human Factors in Computing Systems

### LEADERSHIP & INSTITUTIONAL SERVICE

- 2019 **CSE Diversity, Equity, and Inclusion Committee Member (Current)**, UC San Diego, La Jolla, USA
- 2018 **Graduate Women in Computing Member (Current)**, UC San Diego, La Jolla, USA
- 2017 **MS Program Representative**, CSE, UC San Diego, La Jolla, USA
- 2014 **Organizing Committee Member & Host**, Microsoft's Build The Shield, Hyderabad, India
- 2013 **Treasurer**, AAINA Dramatics, Manipal University's official dramatics club, Manipal, India
- 2013 **Category head, Hospitality**, Revels, MIT Manipal's national cultural festival, Manipal, India
- 2013 **Management Committee Member**, Indian Society of Technical Education, Manipal, India
- 2012 **Category head, Hospitality**, Techatva, MIT Manipal's national technical festival, Manipal, India
- 2012 **Sponsorship Head**, AAINA Dramatics, Manipal, India
- 2012 **Assistant Director**, AAINA Dramatics, Manipal, India
- 2011 **Set Designer**, AAINA Dramatics, Manipal, India

### OUTREACH & VOLUNTEERING

- 2020 **California Wolf Center (Current)**, Julian, CA, USA
- 2012 **Volunteer Service Organization (VSO)**, Manipal, India
- 2008 **Dubai Cares**, Improving access to primary education in developing countries, Dubai, UAE