Mauricio Sousa, curriculum vitae

マウリシオ・ソウザ

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Assistant Professor, Keio University Graduate School of Media Design

Embodied Media Project
Project Cybernetic being

Research Interests

Human-Computer Interaction, Human-Robot Interaction, and Human-AI Interaction; Remote Collaboration, Telepresence, and Telexistence; Embodied and Spatial Computing; Mixed and Cross-Reality Environments; AI-Driven Interfaces and Companions; Machine Perception and Representation; Robotic Avatars and Human Augmentation

Short bio

I am a Project Senior Assistant Professor at the Embodied Media Project Lab, Keio School of Media Design. My focus is in Human-Computer Interaction (HCI), spatial computing, remote collaboration, augmented and virtual reality, and AI wearables. Previously, I was a Research Scientist at Reality Labs Research at Meta in Toronto, where I led research on AI-sensing wristbands for haptic feedback and intelligent assistance. Prior to that, I was a Postdoctoral Fellow at the Dynamic Graphics Project Lab (DGP), Department of Computer Science at the University of Toronto, working with Professor Tovi Grossman. Earlier, I was a researcher at the Visualization and Intelligent Multimodal Interfaces Group (VIMMI), University of Lisbon, under the supervision of Professor Joaquim Jorge. I hold a Ph.D., MSc, and BSc in Computer Science and Engineering from Instituto Superior Técnico, University of Lisbon.

My research focuses on designing intelligent systems that enhance human perception, collaboration, and action across physical and virtual environments. I explore how multimodal sensing, computer vision, and vision-language models can be embedded into wearable and spatial interfaces to support real-time interaction and communication. A core emphasis is enabling telepresence, remote collaboration, and context-aware guidance through AI-augmented AR/VR systems. From perception manipulation in 3D remote workspaces to haptic grammars for embodied AI companions, my projects span domains including engineering, healthcare, education, and everyday interaction. I have published over 50 peer-reviewed papers in top-tier venues such as ACM CHI, UIST, ISS, IUI, VRST, IEEE VR, IJHCS, and IEEE TVCG, and received multiple awards recognizing research excellence.

Education

Ph.D. in Computer Science and Engineering **2020**
Instituto Superior Técnico, University of Lisbon, Portugal
Thesis: *Perception Manipulation for Seamless Face-to-face Remote Collaboration*
Summa Cum Laude (highest honour for Doctoral Degree)
Advisor: Prof. Joaquim Jorge
Committee: Prof. Anthony Steed, Prof. Pedro Campos, Prof. Carlos Martinho, Prof. Miguel Sales Dias, and Prof. Pavão Martins

M.Sc. in Information Systems and Computer Engineering **2014**
Instituto Superior Técnico, University of Lisbon, Portugal
Thesis: *Remote Proxemics for Collaborative Virtual Environments*
Advisors: Prof. Joaquim Jorge, and Prof. Alfredo Ferreira
Committee: Prof. Carlos Duarte and Prof. Pedro Sousa

B.Sc. in Information Systems and Computer Engineering **2012**
Instituto Superior Técnico, University of Lisbon, Portugal

Experience

Graduate School of Media Design, Keio University (KMD), Japan — Starting Oct 2025

慶應義塾大学大学院メディアデザイン研究科

Project Senior Assistant Professor – Conducting research, teaching, and mentoring in Human-Computer Interaction, AI wearables, spatial computing, and mixed reality interaction.

- Leading research on embodied media, AI-powered wearable devices, and multimodal interaction in collaboration with the Embodied Media Project and Cybernetic Being Project.
- Teaching and mentoring graduate students within KMD's interdisciplinary design and innovation framework.
- Collaborating on research integrating HCI, tangible interfaces, AI communication, and accessibility across physical and virtual spaces.

Meta Reality Labs Research, Toronto — 2024

Senior Research Scientist – Researching, designing, and evaluating advanced input interaction techniques for wearables, AI, and the next generation of neural interfaces and spatial computing.

- Led the planning, prototyping, and user evaluation of learning and onboarding approaches for neural interfaces and spatial computing gesture input.
- Designed and evaluated novel AI wearable devices for input and haptics, with a focus on AI companion communication and multimodal interaction.

DGP Lab, Dept. of Computer Science, University of Toronto — 2020 - 2024

Postdoctoral Fellow – Researching, designing, and evaluating novel interaction techniques. Mentoring and supporting undergraduate and graduate students.

- Led and collaborated on projects involving novel interaction techniques, AI-driven creativity tools, wearable I/O, and spatial computing.
- Mentored 13 undergraduate and graduate students and co-advised 2 Master's theses on topics such as animated storytelling in MR and physiological sensing in education.
- Contributed to research on telepresence, multimodal haptics, generative interaction design, and embodied AI sensing for remote and immersive collaboration.
- Co-authored over 15 peer-reviewed publications, including in *ACM CHI*, *UIST*, *IUI*, *IEEE VR*, *ISMAR*, and *GI*.
- Received multiple awards including CHI and UIST Honorable Mentions, and the Jazzki 2024 Human-Machine Creativity Award.

Champalimaud Center for the Unknown — 2018 - 2020

Researcher – Researching, designing, and evaluating novel mixed reality interaction techniques for minimally invasive laparoscopic surgery.

- Developed augmented reality systems to assist with anatomical understanding and surgical planning.
- Developed Laparoscopic simulation hardware for training with augmented reality heads-up display capabilities.
- Collaborated with surgeons and medical experts to ensure clinical relevance and usability.
- Co-authored 2 publications on laparoscopic surgery and anatomical visualization, including articles in *Journal of Biomedical Informatics* and *Computers & Graphics*.

INESC-ID, Visualization and Intelligent Multimodal Interfaces **2012 - 2020**

Researcher – Researching, designing, and evaluating novel interaction techniques. Managing and maintaining VIMMI's media lab.

- Conducted research on 3D user interfaces, spatial computing, and AR/VR techniques for collocated and remote collaboration.
- Developed interactive systems using head-mounted displays, tabletops, wearables, and large-scale displays.
- Co-authored over 25 peer-reviewed publications including CHI, IEEE VR, VRST, and TVCG.
- Co-advised students on projects in mixed reality, proxemics, virtual anatomy, and haptics.
- Contributed to funded research projects on architectural modeling, medical visualization, and collaborative industrial design.

Publications

Over the course of my academic and industry career, I have developed a multidisciplinary research portfolio at the intersection of Human-Computer Interaction, spatial computing, and embodied interaction. These publications[1] span leading venues such as ACM CHI, ACM UIST, IEEE ISMAR, and IEEE VR, where my work has been consistently recognized with awards, including Best Paper and Honorable Mentions, as well as media coverage and creativity prizes.

Overview:
33 conference proceedings, **8** journal articles **13** other peer-reviewed publications, **2** book chapters, and **2** theses. **1400**+ citations, h-index **23** (Google Scholar).

Peer-reviewed Conference Proceedings

C33 **Adaptique: Multi-objective and Context-aware Online Adaptation of Selection Techniques in Virtual Reality.** Chao-Jung Lai, Mauricio Sousa, Tianyu, Zhang, Ludwig Sidenmark, and Tovi Grossman ACM Symposium on User Interface Software and Technology (UIST), 2025

C32 **VibraForge: A Scalable Prototyping Toolkit For Creating Spatialized Vibrotactile Feedback Systems.** Bingjian Huang, Siyi Ren, Yuewen Luo, Qilong Cheng, Hanfeng Cai, Yeqi Sang, Mauricio Sousa, Paul H. Dietz, and Daniel Wigdor. ACM Conference on Human Factors in Computing Systems (CHI), 2025

C31 **Sparc: Shared perspective with avatar distortion for remote collaboration in VR** João Simões, Anderson Maciel, Catarina Moreira, Mauricio Sousa, and Joaquim Jorge Computer Graphics International Conference (CGI), 2024

C30 **Exploring User Placement for VR Remote Collaboration in a Constrained Passenger Space.** Daniel Medeiros, Graham Wilson, Mauricio Sousa, Nadia Pantidi, Diego Drago, Mark McGill, and Stephen Brewster. ACM Symposium on Virtual Reality Software and Technology (VRST), 2024
Best Paper Award

C29 **PhoneInVR: An Evaluation of Spatial Anchoring and Interaction Techniques for Smartphone Usage in Virtual Reality.** Fengyuan Zhu, Mauricio Sousa, Ludwig Sidenmark, and Tovi Grossman. ACM Conference on Human Factors in Computing Systems (CHI), 2024.

C28 **SynthScribe: Deep Multimodal Tools for Synthesizer Sound Retrieval and Exploration.** Stephen Brade, Bryan Wang, Mauricio Sousa, Gregory Lee Newsome, Sageev Oore, and Tovi Grossman. ACM Conference on Intelligent User Interfaces (IUI), 2024
Jazzki 2024 Human-Machine Creativity Award

[1] **Note on publication venues:** in Human Computer Interaction, the ACM CHI, ACM UIST, IEEE ISMAR, IEEE VR are considered the best forums for dissemination of research results and covers the broad spectrum of research in Human Computer Interaction.

C27 **PinchLens: Applying Spatial Magnification and Adaptive Control Display Gain for Precise Selection in Virtual Reality.** Fengyuan Zhu, Ludwig Sidenmark, Mauricio Sousa, and Tovi Grossman. IEEE International Symposium on Mixed and Augmented Reality (ISMAR), 2023

C26 **Promptify: Text-to-Image Generation through Interactive Prompt Exploration with Large Language Models** Stephen Brade, Bryan Wang, Mauricio Sousa, Sageev Oore, and Tovi Grossman. ACM Symposium on User Interface Software and Technology (UIST), 2023

C25 **EnchantedBrush: Animating in Mixed Reality for Storytelling and Communication** Eve Mingxiao Li, Anran Qi, Mauricio Sousa, and Tovi Grossman. ACM GI Graphics Interface Conference, 2023.

C24 **Stargazer: An Interactive Camera Robot for Capturing How-To Videos Based on Subtle Instructor Cues** Jiannan Li, Mauricio Sousa, Karthik Mahadevan, Bryan Wang, Paula Akemi Aoyagui, Nicole Yu, Angela Yang, Ravin Balakrishnan, Anthony Tang, and Tovi Grossman. ACM Conference on Human Factors in Computing Systems (CHI), 2023.

C23 **Investigating Guardian Awareness Techniques to Promote Safety in Virtual Reality.** Sixuan Wu, Jiannan Li, Mauricio Sousa, and Tovi Grossman. IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2023.

C22 **MAGIC: Manipulating Avatars and Gestures to Improve Remote Collaboration.** Catarina G. Fidalgo, Mauricio Sousa, Daniel Mendes, Rafael dos Anjos, Daniel Medeiros, Karan Singh, and Joaquim Jorge. IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2023.

C21 **Touching The Droid: Understanding and Improving Touch Precision With Mobile Devices in Virtual Reality.** Fengyuan Zhu, Zhuoyue Lyu, Mauricio Sousa, and Tovi Grossman. IEEE International Symposium on Mixed and Augmented Reality (ISMAR), 2022

C20 **immersivePOV: Filming How-To Videos with a Head-Mounted 360° Action Camera.** Kevin Huang, Jiannan Li, Mauricio Sousa, and Tovi Grossman. ACM Conference on Human Factors in Computing Systems (CHI), 2022.
Honorable Mention Award

C19 **ASTEROIDS: Exploring Swarms of Mini-Telepresence Robots for Physical Skill Demonstration.** Jiannan Li, Mauricio Sousa, Chu Li, Jessie Liu, Yan Chen, Ravin Balakrishnan, and Tovi Grossman. ACM Conference on Human Factors in Computing Systems (CHI), 2022.

C18 **Route Tapestries: Navigating 360° Virtual Tour Videos Using Slit-Scan Visualizations.** Jiannan Li, Jiahe Lyu, Mauricio Sousa, Ravin Balakrishnan, Anthony Tang, and Tovi Grossman. ACM Symposium on User Interface Software and Technology (UIST), 2021

C17 **Promoting Reality Awareness in Virtual Reality through Proxemics.** Daniel Medeiros, Rafael dos Anjos, Nadia Pantidi, Kun Huang, Mauricio Sousa, Craig Anslow and Joaquim Jorge. IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2021.

C16 **"Grip-that-there": An Investigation of Explicit and Implicit Task Allocation Techniques for Human-Robot Collaboration.** Karthik Mahadevan, Mauricio Sousa, Anthony Tang, and Tovi Grossman. ACM Conference on Human Factors in Computing Systems (CHI), 2021.
Honorable Mention Award

C15 **Negative Space: Investigating Workspace Awareness in 3D Face-to-face Remote Collaboration.** Mauricio Sousa, Daniel Medeiros, and Joaquim Jorge. ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI), 2019

C14 **Safe Walking in VR.** Mauricio Sousa, Daniel Medeiros, Francisco Venda, and Joaquim Jorge. ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI), 2019

C13 **Adventures in Hologram Space: Exploring the Design Space of Eye-to-eye Volumetric Projection-based Telepresence.** Rafael Kuffner dos Anjos, Mauricio Sousa, Daniel Medeiros, Daniel Mendes, Mark Billinghurst, Craig Anslow and Joaquim Jorge. ACM Symposium on Virtual Reality Software and Technology (VRST), 2019

C12 **WARPING DEIXIS: Distorting Gestures to Enhance Collaboration.** Mauricio Sousa, Rafael Kuffner Dos Anjos, Daniel Mendes, Mark Billinghurst, and Joaquim Jorge. ACM Conference on Human Factors in Computing Systems (CHI), 2019
Featured in the 'Best of CHI 2019' event by IndiaHCI

C11 **Using Custom Transformation Axes for Mid-Air Manipulation of 3D Virtual Objects.** Daniel Mendes, Mauricio Sousa, Rodrigo Lorena, Alfredo Ferreira, and Joaquim Jorge. ACM Symposium on Virtual Reality Software and Technology (VRST), 2017

C10 **Creepy Tracker Toolkit for Context-aware Interfaces.** Mauricio Sousa, Daniel Mendes, Rafael Kuffner dos Anjos, Daniel Medeiros, Alberto Raposo, Alfredo Ferreira, João Pereira, and Joaquim Jorge. ACM Interactive Surfaces and Spaces (ISS), 2017

C9 **VRRRRoom: Virtual Reality for Radiologists in the Reading Room.** Mauricio Sousa, Daniel Mendes, Soraia Paulo, Nuno Matela, Joaquim Jorge, and Daniel S. Lopes. ACM Conference on Human Factors in Computing Systems (CHI), 2017

C8 **PRECIOUS! Out-of-reach Selection using Iterative Refinement in VR.** Daniel Mendes, Daniel Medeiros, Eduardo Cordeiro, Mauricio Sousa, Alfredo Ferreira, and Joaquim Jorge. IEEE Symposium on 3D User Interfaces (3DUI), 2017

C7 **Mid-air Modeling with Boolean Operations in VR.** Daniel Mendes, Daniel Medeiros, Mauricio Sousa, Ricardo Ferreira, Alberto Raposo, Alfredo Ferreira, and Joaquim Jorge. IEEE Symposium on 3D User Interfaces (3DUI), 2017

C6 **Effects of Speed and Transitions on Target-based Travel Techniques.** Daniel Medeiros, Eduardo Cordeiro, Daniel Mendes, Mauricio Sousa, Alberto Raposo, Alfredo Ferreira and Joaquim Jorge. ACM Symposium on Virtual Reality Software and Technology (VRST), 2016

C5 **Perceiving Depth: Optical versus Video See-through.** Daniel Medeiros, Mauricio Sousa, Daniel Mendes, Alberto Raposo, and Joaquim Jorge. ACM Symposium on Virtual Reality Software and Technology (VRST), 2016

C4 **SleeveAR: Augmented Reality for Rehabilitation using Realtime Feedback.** Mauricio Sousa, João Vieira, Daniel Medeiros, Artur Arsenio, and Joaquim Jorge. ACM Intelligent User Interfaces (IUI), 2016

C3 **From Tecton to Teknos: Going back to the Classical Roots of Architecture.** Daniel Mateus, Mauricio Sousa, Rui de Klerk, Sandra Gama, Joaquim Jorge, and José Duarte. Education and Research in Computer Aided Architectural Design in Europe (eCAADe), 2015

C2 **Eery Space: Facilitating Virtual Meetings Through Remote Proxemics.** Mauricio Sousa, Daniel Mendes, Alfredo Ferreira, João Madeiras Pereira, and Joaquim Jorge. Human-Computer Interaction—INTERACT, 2015

C1 **Beyond Post-It: Structured Multimedia Annotations for Collaborative VEs.** João Guerreiro, Daniel Pires, Mauricio Sousa, Daniel Mendes, Ismael Santos, Alberto Raposo, and Joaquim Jorge. Eurographics Symposium on Virtual Environments (EGVE), 2014

Journal Articles

J8 **Exploring AR Hand Augmentations as Error Feedback Mechanisms for Enhancing Gesture-based Tutorials** Catarina G. Fidalgo, Yukang Yan, Mauricio Sousa, Joaquim Jorge, and David Lindlbauer. Frontiers in Virtual Reality, 2025

J7 **A Survey on Remote Assistance and Training in AR and VR Environments**. Catarina G. Fidalgo, Yukang Yan, Hyunsung Cho, Mauricio Sousa, David Lindlbauer, and Joaquim Jorge. IEEE Transactions on Visualization and Computer Graphics (TVCG), 2023

J6 **Laparoscopy with Augmented Reality Adaptations.** Ezequiel Zorzal, José Miguel Gomes, Mauricio Sousa, Pedro Belchior, Pedro G da Silva, Nuno Figueiredo, Daniel S. Lopes, and Joaquim Jorge. Elsevier Journal of Biomedical Informatics, 2020

J5 **Anatomy Studio: a Tool for Virtual Dissection Through Augmented 3D Reconstruction Sessions.** Ezequiel Zorzal, Mauricio Sousa, Daniel Mendes, Rafael K dos Anjos, Soraia F. Paulo, Pedro Rodrigues, José Mendes, Vincent Delmas, Jean-Francois Uhl, José Mogorrón, Daniel S. Lopes, and Joaquim Jorge. Computers & Graphics, 2019

J4 **Magic Carpet: Interaction Fidelity for Flying in VR.** Daniel Medeiros, Mauricio Sousa, Alberto Raposo, and Joaquim Jorge. IEEE Transactions on Visualization and Computer Graphics (TVCG), 2019
Recipient of the Encarnação Award 2020 from Eurographics Portuguese chapter

J3 **Design and evaluation of novel out-of-reach selection techniques for VR using iterative refinement.** Daniel Mendes, Daniel Medeiros, Mauricio Sousa, Eduardo Cordeiro, Alfredo Ferreira, and Joaquim Jorge. Computers & Graphics, 2017
Honourable Mention in the 33rd Spring Conference on Computer Graphics

J2 **Hip-directed walking-in-place using a single depth camera.** Luís Bruno, Mauricio Sousa, Alfredo Ferreira, João Madeiras Pereira, and Joaquim Jorge. International Journal of Human-Computer Studies (IJHCS), Elsevier, 2017

J1 **Expeditious Illustration of Layer-Cake Models On and Above a Tactile Surface.** Daniel S. Lopes, Daniel Mendes, Mauricio Sousa, and Joaquim Jorge. Computers & Geosciences (in press), 2016

Book Chapters

B2 **A Tool for Collaborative Anatomical Dissection.** Ezequiel Zorzal, Mauricio Sousa, Daniel Mendes, Soraia Paulo, Pedro Rodrigues, Joaquim Jorge, and Daniel Simões Lopes. Book chapter in Digital Anatomy, Springer, 2021

B1 **Remote Proxemics.** Mauricio Sousa, Daniel Mendes, Daniel Medeiros, Alfredo Ferreira, João Madeiras Pereira, and Joaquim Jorge. Book chapter in Collaboration Meets Interactive Spaces, Springer, 2016

Other Peer-Reviewed Publications

013 **VRChoir: Exploring Remote Choir Rehearsals via Virtual Reality** Tianquan Di, Daniel Medeiros, Mauricio Sousa, and Tovi Grossman. IEEE Conference on Virtual Reality and 3D User Interfaces Posters (IEEE VR), 2023

012 **Anatomy Studio II: A Cross-Reality Application for Teaching Anatomy.** Joaquim Jorge, Pedro Belchior, Abel Gomes, Mauricio Sousa, João Pereira, and Jean-François Uhl. XR for Healthcare and Wellbeing Workshop Workshop (IEEE VR), 2022

011 **Design requirements to improve laparoscopy via XR.** Ezequiel R Zorzal, Mauricio Sousa, Pedro Belchior, João Madeiras Pereira, Nuno Figueiredo, and Joaquim Jorge. XR for Healthcare and Wellbeing Workshop Workshop (IEEE VR), 2022

010 **Constellation: a Multi-User Interface for Remote Drone Tours.** Jiannan Li, Mauricio Sousa, Ravin Balakrishnan, and Tovi Grossman. International Conference on Human-Agent Interaction (HAI), 2021

09 **Demo hour.** Paden Shorey, Audrey Girouard, Sang Ho Yoon, Yunbo Zhang, Ke Huo, Karthik Ramani, Mauricio Sousa, Daniel Mendes, Soraia Paulo, Nuno Matela, Joaquim Jorge, Daniel S. Lopes, Dirk Wenig, Johannes Schöning, Alex Olwal, Mathias Oben, and Rainer Malaka. Demo hour. interactions 24, 6 (October 2017), 8-11.

08 **Evaluation of Travel Techniques for Virtual Reality.** Eduardo Cordeiro, Daniel Medeiros, Daniel Mendes, Mauricio Sousa, Alberto Raposo, Alfredo Ferreira, and Joaquim Jorge. Portuguese Meeting of Computer Graphics (EPCG), 2016

07 **Beyond Eery Space: Applying Gradual Engagement to Remote Proxemics.** Mauricio Sousa, Daniel Medeiros, Alberto Raposo, and Joaquim Jorge. Collaboration meets Interactive Surfaces Workshop, ACM Interactive Tabletops and Surfaces(ITS), 2015

06 **Augmented Reality for Rehabilitation Using Multimodal Feedback.** João Vieira, Mauricio Sousa, Artur Arsénio, and Joaquim Jorge. REHAB2015 Workshop, 2015

05 **Enabling Remote Proxemics through Multiple Surfaces.** Daniel Mendes, Mauricio Sousa, João Madeiras Pereira, Alfredo Ferreira, and Joaquim Jorge. Collaboration meets Interactive Surfaces Workshop, ACM Interactive Tabletops and Surfaces(ITS), 2014

04 **Eery Proxemics: Proximidade à Distância usando Múltiplas Superfícies.** Mauricio Sousa, Daniel Mendes, João Madeiras Pereira, Alfredo Ferreira, and Joaquim Jorge. Portuguese Meeting of Computer Graphics (EPCG), 2014

03 **ThumbCam: Returning to single touch interactions to explore 3D virtual environments.** Daniel Mendes, Mauricio Sousa, Alfredo Ferreira, and Joaquim Jorge. ACM Interactive Tabletops and Surfaces(ITS), 2014

02 **Binding a Handheld Device with its Owner. Mauricio Sousa and Joaquim Jorge.** Collaboration meets Interactive Surfaces Workshop, ACM Interactive Tabletops and Surfaces (ITS), 2013

01 **Collaborative 3D Visualization on Large Screen Displays.** Daniel Mendes, Mauricio Sousa, Bruno Araújo, Alfredo Ferreira, Hildegardo Noronha, Pedro Campos, Luciano Soares, Alberto Raposo, and Joaquim Jorge. Powerwall Workshop, SIGCHI Conference on Human Factors in Computing Systems (CHI), 2013

Theses

T2 **Perception Manipulation for Seamless Face-to-face Remote Collaboration.**
Mauricio Sousa. Ph.D. Thesis. Instituto Superior Técnico, University of Lisbon. 2020

T1 **Remote Proxemics for Collaborative Virtual Environments.**
Mauricio Sousa. M.Sc. Thesis. Instituto Superior Técnico, University of Lisbon. 2014

Academic Service

Program Committee

6 ACM Conference on Human Factors in Computing Systems (CHI)
Subcommittee Associate Chair: *Interacting with Devices: Interaction Techniques & Modalities*
2024, 2025, 2026

5 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)
2021, 2024, 2025

4 ACM Conference on Human Factors in Computing Systems (CHI)
Awards Committee Member for subcommittee: *Interacting with Devices: Interaction Techniques & Modalities*
2025

3 ACM Symposium on User Interface Software and Technology (UIST)
Associate Chair
2024

2 International Conference on Graphics and Interaction (ICGI)
2021, 2022, 2023, 2024, 2025

1 ACM International Conference on Multimodal Interaction (ICMI)
2020

Conference Organizing Committee

4 IEEE Conference on Virtual Reality and 3D User Interfaces (VR)
Video Co-chair
2023

3 ACM International Conference on Interactive Surfaces and Spaces (ISS)
Web Chair and Online Experience Co-chair
2020, 2022

2 IEEE Conference on Virtual Reality and 3D User Interfaces (VR)
Web Chair
2021, 2022

1 Eurographics
Fast-forward Chair
2016

Workshops Organizing Committee

W1 **Enhancing cross-reality applications and user experiences.** Frank Maurer, Craig Anslow, Joaquim Jorge, and Mauricio Sousa. International Conference on Advanced Visual Interfaces (AVI), 2022

Conference Session Chair

ACM Symposium on User Interface Software and Technology (UIST)
Session: *Device Augmentation & Communication*
2021

Peer Reviewer

22 Transactions on Visualization and Computer Graphics (TVCG)
2023, 2024, 2025

21 Human-Computer Interaction (HCI)
2024

20 IEEE Conference on Virtual Reality and 3D User Interfaces (VR)
2019, 2023, 2024

19 ACM Conference on Human Factors in Computing Systems (CHI)
2018, 2020, 2021, 2022, 2023, 2024

18 ACM Symposium on Virtual Reality Software and Technology (VRST)
2017, 2018, 2020, 2023, 2024

17 ACM International Conference on Multimodal Interaction (ICMI)
2018, 2019, 2024

16 The International Journal of Human-Computer Studies (IJHCS)
2023

15 ACM International Conference on Tangible, Embedded, and Embodied Interaction (TEI)
2018, 2020, 2023, 2026

13 IEEE VIS
2023

12 ACM Symposium on User Interface Software and Technology (UIST)
2020, 2021, 2022, 2023

11 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)
2017, 2018, 2019, 2020, 2021, 2022, 2023

10 ACM Conference on Designing Interactive Systems (DIS)
2016, 2021, 2023

9 MDPI Sensors
2023

8 Springer Virtual Reality (VR)
2023

7 ACM Conference on Intelligent User Interfaces (IUI)
2023

6 Elsevier Computers & Graphics
2018, 2019, 2020, 2021, 2023

5 International Conference on Graphics and Interaction (ICGI)
2021, 2022, 2023, 2025

4 ACM International Conference on Interactive Surfaces and Spaces (ISS)
2015, 2016, 2017, 2018, 2019, 2020, 2022, 2025

3 ACM Symposium on Spatial User Interaction (SUI)
2017, 2020

2 ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)
2020

1 IEEE Consumer Electronics Magazine (CEM)
2016

Thesis Committee Jury Member

Master's Thesis Committee for Filipe Guedes Barbosa **2022**
Faculdade de Engenharia, Universidade do Porto
Thesis: *Shape-a-getti: A haptic device for getting multiple shapes using a single actuator.*

Teaching, Supervision, and Mentoring

Teaching Assistant

Human-Computer Interaction **2017/18**
Instituto Superior Técnico, University of Lisbon
Undergraduate course on the fundamental principles and rules for the design, development, and evaluation of interactive devices, systems, and services.

PhD Students

1 **Catarina G. Fidalgo**, Instituto Superior Técnico, Carnegie Mellon University **2021** -
Co-Advisor with Joaquim Jorge and David Lindlbauer
Thesis: TBD
[C22]

Master Students

7 **Mingxiao (Eve) Li**, University of Toronto. **2021 - 2023**
Co-Advisor with Tovi Grossman.
Thesis: *EnchantedBrush: Animating in Mixed Reality for Storytelling and Communication*
[C25]

6 **João Simões**, Instituto Superior Técnico, University of Lisbon. **2021 - 2023**
Co-Advisor with Joaquim Jorge.
Thesis: *SURI : Stretching User References for Interaction - Multi-user collaboration with a shared perspective*
[C31]

5 **Carlos McGregor Muro**, University of Toronto. **2020 - 2022**
Co-Advisor with Tovi Grossman.
Thesis: *Knowing when students struggle before verbalizing it using non-intrusive psycho-physiological indicators.*

4 **Manuel Lopes**, Instituto Superior Técnico, University of Lisbon. **2020 - 2021**
Co-Advisor with Joaquim Jorge.
Thesis: *CHASM - Computer-Human Assisted Segmentation of Medical Structures*

3 **Catarina G. Fidalgo**, Instituto Superior Técnico, University of Lisbon. **2019 - 2020**
Co-Advisor with Joaquim Jorge.
Thesis: *MAGIC: Manipulating Avatars and Gestures to Improve Remote Collaboration*
[J7]

2 **Francisco Venda**, Instituto Superior Técnico, University of Lisbon. **2016 - 2017**
Unofficial Co-Advisor with Joaquim Jorge.
Thesis: *Safe Walking in VR*
[C14]

1 **João Vieira**, Instituto Superior Técnico, University of Lisbon. **2014 - 2015**
Unofficial Co-Advisor with Joaquim Jorge and Artur Arsénio.
Thesis: *SleeveAR: Augmented Reality for Rehabilitation Using Realtime Feedback*
[C4] [O6]

Undergrad Researchers

6 **Chao-Jung Lai**, University of Toronto. **2023 - 2024**
Co-Advisor with Tovi Grossman and Ludwig Sidenmark.
[C33]

5 **Helena Jovic**, University of Toronto. **2022 - 2023**
Co-Advisor with Tovi Grossman.

4 **Sixuan Wu**, University of Toronto. **2022 - 2023**
Co-Advisor with Tovi Grossman.
[C23]

3 **Angela Yang**, University of Toronto. **2022**
Co-Advisor with Tovi Grossman.
[C24]

2 **Tianquan (Andy) Di**, University of Toronto. **2021 - 2022**
Co-Advisor with Tovi Grossman.
[O13]

1 **Kevin Huang**, University of Toronto. **2020 - 2021**
Co-Advisor with Tovi Grossman.
[C20]

Research Assistants

1 **Chu Li**, University of Toronto. **2021 - 2022**
Co-Advisor with Tovi Grossman.
[C19]

Mentoring (Ph.D. Students)

4 **Jiannan Li**, University of Toronto. **2020 - 2023**
[C24] [C23] [C20] [C19] [C18] [010]

3 **Laura (Di) Chen**, University of Toronto. **2020 - 2023**

2 **Fengyuan Zhu**, University of Toronto. **2020 - 2023**
[C29] [C27] [C21]

1 **Karthik Mahadevan**, University of Toronto. **2020 - 2023**
[C24] [C16]

Funding

5 **Snap Creative Challenge**
Project: *Audio-Augmented Reminiscence by Capturing and Replaying Memories*
Team Member
2023

4 **Champalimaud Center for the Unknown Grant & INESC-ID**
Project: *Laparoscopic Surgery Through Augmented Reality*
A viability study for the inclusion of Augmented Reality in the laparoscopic surgical theater.
Researcher
2018

3 **Portuguese Science and Technology Foundation Grant**
Project: *Interactive Tablets for Collaborative Scenarios Related to 3D Medical Image Exploration*
Interactive experiences for medical collaborative workspaces 3D images.
Researcher
2017

2 **Portuguese Science and Technology Foundation Grant**
Project: *Digital Mockup: Touching the 3rd Dimension*
Interaction techniques for architectural 3D modeling design and review in mixed reality
Researcher
2016

1 **Portuguese Science and Technology Foundation Grant**
Project: *CEDAR - Collaborative Engineering Design And Review*
Design and evaluation of novel collaborative spacial interaction techniques for the Oil & Gas Industry
Researcher
2015

Invited Talks

From Passive Trackers to Proactive AI Wearable Companions: Uniting Nonverbal Communication and Spatial Understanding, Google, Seattle (June 2025)
Host: Mar Gonzalez-Franco

Awards and Recognition

10 Special Recognition for Outstanding Reviews
CHI 2025 Papers

9 Best Paper Award ACM VRST 2024
[C30] *Exploring User Placement for VR Remote Collaboration in a Constrained Passenger Space.*

8 Jazzki 2024 Human-Machine Creativity Award, First Place
[C28] *SynthScribe: Deep Multimodal Tools for Synthesizer Sound Retrieval and Exploration.*

7 Special Recognition for Outstanding Reviews
UIST 2023 Papers

8 Recognition of Service Award IEEE VR 2023.
In appreciation for contributions to IEEE VR Conference as Videos Co-Chair.

7 Special Recognition for Outstanding Reviews
UIST 2022 Papers

6 Best Paper Honorable Mention Award ACM CHI 2022
[C20] *immersivePOV: Filming How-To Videos with a Head-Mounted 360° Action Camera.*

5 Recognition of Service Award IEEE VR 2022.
In appreciation for contributions to IEEE VR Conference as Web Chair.

4 Best Paper Honorable Mention Award ACM CHI 2021.
[C16] *"Grip-that-there": An Investigation of Explicit and Implicit Task Allocation Techniques for Human-Robot Collaboration.*

3 Paper featured in the 'Best of CHI 2019' event by IndiaHCI.
[C12] *WARPING DEIXIS: Distorting Gestures to Enhance Collaboration.*

2 Paper recipient of the Encarnação Award 2020 from Eurographics Portuguese chapter.
[J4] *Magic Carpet: Interaction Fidelity for Flying in VR.*

1 Honorable Mention Award in the 33rd Spring Conference on Computer Graphics 2017.
[J3] *Design and evaluation of novel out-of-reach selection techniques for VR using iterative refinement.*

Selected Media

2 Tuning into Tomorrow.
AI can help musicians compose and create new sounds. Is it just another music-making tool– or something else?
Adina Bresge, University of Toronto Magazine. April 2024
[C28]

1 Interactive 'Stargazer' camera robot assists with how-to video creation.
Krystle Hewitt, Department of Computer Science, University of Toronto. May 2023
[C24]

Professional Membership

ACM (Association for Computing Machinery) - https://www.acm.org
Professional Member **since 2021**
Student Member **2016 - 2021**

Skills

Leadership and mentorship, cross-functional collaboration, project management, communication and presentation skills, problem-solving and critical thinking, adaptability to new technologies and tools.

Research methodology and experimental design, data collection, analysis, and interpretation, statistical analysis and hypothesis testing, machine learning (ML) and deep learning (DL), computer vision (CV) and image processing, natural language processing (NLP), reinforcement learning (RL), multimodal learning (e.g., vision-language models), 3D reconstruction and geometry, semantic segmentation and object detection, feature extraction and matching, sensor fusion (e.g., vision, proprioception, touch), scientific writing and peer-reviewed publications, literature review and state-of-the-art analysis, prototyping and proof-of-concept development.

Python, C, C++, C#, MATLAB, Java, R, PyTorch, TensorFlow, OpenCV, PIL, Mediapipe, NumPy, Pandas, SciPy, Git, GitHub, GitLab, SQL, Unity 3D, OpenGL, Figma

Contact References

References are available upon request.