



# MAURÍCIO SOUSA

## Curriculum Vitae

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Google Scholar: [225+ citations, h-index 10](#)

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### SHORT BIO

I am a HCI researcher. Previously I was a researcher at the [Visualization and Intelligent Multimodal Interfaces Group](#) (VIMMI) under the supervision of [Professor Joaquim Jorge](#). Received my PhD (2020), MSc (2014) and BSc (2012) degrees in Computer Science and Engineering. In my research, I have been designing and evaluating novel interaction techniques for the engineering, architecture and medical fields, focussing on computer supported remote collaborative work in Mixed Reality environments. I also have experience in 3D user interfaces, interactive spaces, touch and mid-air gestures. And I have been fortunate to see my research published in top international conferences and journals, such as ACM CHI, ACM ISS, ACM IUI, ACM VRST, INTERACT, IJHCS, and IEEE TVCG. I am currently a member of the organising committee of the international conferences ACM ISS and IEEE VR.

### RESEARCH AND TEACHING INTERESTS

Human-Computer Interaction, 3D User Interfaces, collocated and remote collaboration using multiple interactive surfaces, holograms, and Mixed Reality.

### EDUCATION

#### INSTITUTO SUPERIOR TÉCNICO • UNIVERSITY OF LISBON

- 2020 Ph.D. in Computer Science and Engineering  
Thesis: Perception Manipulation for Seamless Face-to-face Remote Collaboration  
Advisor: Prof. Joaquim Jorge  
Grade: Summa Cum Laude (highest honour for Doctoral Degree)  
Thesis committee: Prof. Anthony Steed, Prof. Pedro Campos, Prof. Carlos Martinho, Prof. Miguel Sales Dias, and Prof. Pavão Martins
- 2014 MSc in Information Systems and Computer Engineering  
Thesis: Remote Proxemics for Collaborative Virtual Environments  
Advisor: Prof. Joaquim Jorge, Prof. Alfredo Ferreira  
Grade: 18  
Thesis committee: Prof. Carlos Duarte, Prof. Pedro Sousa
- 2012 BSc in Information Systems and Computer Engineering

### EXPERIENCE

#### • [CHAMPALIMAUD CENTER FOR THE UNKNOWN](#)

RESEARCH • 2018 - 2020 • Researching, designing and evaluating novel mixed reality interaction techniques for minimally invasive laparoscopic surgery.

#### • [INESC-ID, VISUALIZATION AND INTELLIGENT MULTIMODAL INTERFACES GROUP \(VIMMI\)](#)

RESEARCH • 2012 - 2020 • Researching, designing and evaluating novel interaction techniques in 3D user interfaces for collocated and remote collaboration using head-mounted displays, walls, tabletops, mobiles, large scale displays, and wearables. I also helped maintaining VIMMI's [media lab](#).

#### • [Dep. COMPUTER SCIENCE AND ENGINEERING, INSTITUTO SUPERIOR TÉCNICO, UNIVERSITY OF LISBON](#)

TEACHING ASSISTANT • 2nd Semester, 2017/18 • Human-Computer Interaction

### SELECTED PUBLICATIONS

- S9 [Magic Carpet: Interaction Fidelity for Flying in VR](#),  
Daniel Medeiros, Maurício Sousa, Alberto Raposo, and Joaquim Jorge,  
*IEEE Transactions on Visualization and Computer Graphics* (TVCG), 2019
- S8 [WARPING DEIXIS: Distorting Gestures to Enhance Collaboration](#),  
Maurício Sousa, Rafael Kuffner Dos Anjos, Daniel Mendes, Mark Billinghurst, and Joaquim Jorge,  
*ACM Conference on Human Factors in Computing Systems* (CHI), 2019
- S7 [Using Custom Transformation Axes for Mid-Air Manipulation of 3D Virtual Objects](#),  
Daniel Mendes, Maurício Sousa, Rodrigo Lorena, Alfredo Ferreira, and Joaquim Jorge,  
*ACM Symposium on Virtual Reality Software and Technology* (VRST), 2017
- S6 [Creepy Tracker Toolkit for Context-aware Interfaces](#),  
Maurício 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

- S5 **[VRRRRoom: Virtual Reality for Radiologists in the Reading Room](#)**,  
Maurício Sousa, Daniel Mendes, Soraia Paulo, Nuno Matela, Joaquim Jorge, and Daniel S. Lopes,  
*ACM Conference on Human Factors in Computing Systems (CHI)*, 2017
- S4 **[Design and evaluation of a novel out-of-reach selection technique for VR using iterative refinement](#)**,  
Daniel Mendes, Daniel Medeiros, Maurício Sousa, Eduardo Cordeiro, Alfredo Ferreira, and Joaquim Jorge,  
*Elsevier Computers & Graphics*, 2017
- S3 **[Hip-directed walking-in-place using a single depth camera](#)**,  
Luís Bruno, Maurício Sousa, Alfredo Ferreira, João Madeiras Pereira, and Joaquim Jorge,  
*International Journal of Human-Computer Studies (IJHCS)*, Elsevier, 2017
- S2 **[SleeveAR: Augmented Reality for Rehabilitation using Realtime Feedback](#)**,  
Maurício Sousa, João Vieira, Daniel Medeiros, Artur Arsénio, and Joaquim Jorge,  
*ACM Intelligent User Interfaces (IUI)*, 2016
- S1 **[Eery Space: Facilitating Virtual Meetings Through Remote Proxemics](#)**,  
Maurício Sousa, Daniel Mendes, Alfredo Ferreira, João Madeiras Pereira, and Joaquim Jorge,  
*Human-Computer Interaction—INTERACT*, 2015

## ACADEMIC SERVICE

### Program Committee:

ACM International Conference on Multimodal Interaction (ICMI): 2020

### Conference Organization:

IEEE Conference on Virtual Reality and 3D User Interfaces (VR) 2021: Organising Committee member

ACM International Conference on Interactive Surfaces and Spaces (ISS) 2020: Organising Committee member

Eurographics 2016: Organising Committee member

### Peer Reviewer:

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

IEEE International Symposium on Mixed and Augmented Reality (ISMAR): 2017, 2018, 2019, 2020

Elsevier Computers & Graphics: 2018, 2019, 2020

ACM Symposium on User Interface Software and Technology (UIST): 2020

ACM Conference on Human Factors in Computing Systems (CHI): 2018, 2020

ACM International Conference on Tangible, Embedded and Embodied Interaction (TEI): 2018, 2020

ACM International Conference on Interactive Surfaces and Spaces (ISS): 2016, 2017, 2018, 2019

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

ACM Symposium on Virtual Reality Software and Technology (VRST): 2017, 2018

ACM Symposium on Spatial User Interaction (SUI): 2017

ACM Conference on Designing Interactive Systems (DIS): 2016

IEEE Consumer Electronics Magazine (CEM): 2016

## REFERENCES

- |    |   |  |
|----|---|--|
| R1 | <b>Joaquim Jorge, PhD</b><br>Full Professor, Instituto Superior Técnico,<br>University of Lisbon<br>Senior Researcher, Inesc-ID<br><br>Rua Alves Redol, 9<br>1000-021 Lisboa,<br>Portugal<br><a href="mailto:jorgej@tecnico.ulisboa.pt">jorgej@tecnico.ulisboa.pt</a> | Lecturer (Assistant Professor)<br>School of Engineering and Computer<br>Science<br>Victoria University of Wellington<br><br>PO Box 600, Wellington, 6140,<br>New Zealand<br><a href="mailto:craig@ecs.vuw.ac.nz">craig@ecs.vuw.ac.nz</a> |
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- R2 **Graig Anslow, PhD**

## FULL LIST OF PUBLICATIONS

15 conference proceedings, 5 journal articles  
220+ citations, h-index 10 ([Google Scholar](#))

### Peer-reviewed Conference Proceedings

- C15 **Negative Space: Investigating Workspace Awareness in 3D Face-to-face Remote Collaboration.** Maurício 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.** Maurício Sousa, Daniel Medeiros, 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, Maurício Sousa, Daniel Medeiros, Daniel Mendes, Mark Billingham, Craig Anslow and Joaquim Jorge. *ACM Symposium on Virtual Reality Software and Technology (VRST)*, 2019
- C12 **WARPING DEIXIS: Distorting Gestures to Enhance Collaboration.** Maurício Sousa, Rafael Kuffner Dos Anjos, Daniel Mendes, Mark Billingham, and Joaquim Jorge. *ACM Conference on Human Factors in Computing Systems (CHI)*, 2019
- C11 **Using Custom Transformation Axes for Mid-Air Manipulation of 3D Virtual Objects.** Daniel Mendes, Maurício 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.** Maurício 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.** Maurício 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, Maurício Sousa, Alfredo Ferreira, and Joaquim Jorge. *IEEE Symposium on 3D User Interfaces (3DUI)*, 2017
- C7 **Mid-air Modelling with Boolean Operations in VR.** Daniel Mendes, Daniel Medeiros, Maurício 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, Maurício 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, Maurício 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.** Maurício 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, Maurício 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.** Maurício 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, Maurício Sousa, Daniel Mendes, Ismael Santos, Alberto Raposo, and Joaquim Jorge *Eurographics Symposium on Virtual Environments(EGVE), 2014*
- P1 **ThumbCam: Returning to single touch interactions to explore 3D virtual environments.** Daniel Mendes, Maurício Sousa, Alfredo Ferreira, and Joaquim Jorge. *ACM Interactive Tabletops and Surfaces(ITS), 2014*

## Journal Articles

- J6 **Laparoscopy with Augmented Reality Adaptations.** Ezequiel Zorzal, José Miguel Gomes, Maurício 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, Maurício 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, Maurício Sousa, Alberto Raposo, and Joaquim Jorge. *IEEE Transactions on Visualization and Computer Graphics (TVCG), 2019*
- J3 **Design and evaluation of novel out-of-reach selection techniques for VR using iterative refinement.** Daniel Mendes, Daniel Medeiros, Maurício Sousa, Eduardo Cordeiro, Alfredo Ferreira, and Joaquim Jorge. *Computers & Graphics, 2017*
- J2 **Hip-directed walking-in-place using a single depth camera.** Luís Bruno, Maurício 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, Maurício Sousa, and Joaquim Jorge. *Computers & Geosciences (in press), 2016*

## Other Peer Reviewed Publications

- O9 **Demo hour.** Paden Shorey, Audrey Girouard, Sang Ho Yoon, Yunbo Zhang, Ke Huo, Karthik Ramani, Maurício 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.*
- O8 **Remote Proxemics.** Maurício Sousa, Daniel Mendes, Daniel Medeiros, Alfredo Ferreira, João Madeiras Pereira, and Joaquim Jorge. *Book chapter in Collaboration Meets Interactive Spaces, Springer, 2016*
- O7 **Evaluation of Travel Techniques for Virtual Reality.** Eduardo Cordeiro, Daniel Medeiros, Daniel Mendes, Maurício Sousa, Alberto Raposo, Alfredo Ferreira, and Joaquim Jorge. *Portuguese Meeting of Computer Graphics (EPCG), 2016*
- O6 **Beyond Eery Space: Applying Gradual Engagement to Remote Proxemics.** Maurício Sousa, Daniel Medeiros, Alberto Raposo, and Joaquim Jorge. *Collaboration meets Interactive Surfaces Workshop, ACM Interactive Tabletops and Surfaces(ITS), 2015*
- O5 **Augmented Reality for Rehabilitation Using Multimodal Feedback.** João Vieira, Maurício Sousa, Artur Arsénio, and Joaquim Jorge. *REHAB2015 Workshop, 2015*
- O4 **Enabling Remote Proxemics through Multiple Surfaces.** Daniel Mendes, Maurício Sousa, João Madeiras Pereira, Alfredo Ferreira, and Joaquim Jorge. *Collaboration meets Interactive Surfaces Workshop, ACM Interactive Tabletops and Surfaces(ITS), 2014*

- O3 **Eery Proxemics: Proximidade à Distância usando Múltiplas Superfícies.** Maurício Sousa, Daniel Mendes, João Madeiras Pereira, Alfredo Ferreira, and Joaquim Jorge. *Portuguese Meeting of Computer Graphics (EPCG)*, 2014
- O2 **Binding a Handheld Device with its Owner.** Maurício Sousa and Joaquim Jorge. *Collaboration meets Interactive Surfaces Workshop, ACM Interactive Tabletops and Surfaces(ITS)*, 2013
- O1 **Collaborative 3D Visualization on Large Screen Displays.** Daniel Mendes, Maurício 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