

Augusto Esteves

Curriculum Vitae

PERSONAL INFORMATION

Date of birth July 2, 1985
Nationality Portuguese

augusto.esteves@tecnico.ulisboa.pt
<http://web.tecnico.ulisboa.pt/augusto.esteves>

WORK EXPERIENCE

Associate Professor at Instituto Superior Técnico (IST), University of Lisbon
Department of Computer Science and Engineering (Portugal) November 2025 – *current*

Assistant Professor at Instituto Superior Técnico (IST), University of Lisbon
Department of Computer Science and Engineering (Portugal) Jan. 2020 – Oct. 2025

Visiting Professor at the Pohang University of Science and Technology
Department of Computer Science and Engineering (Republic of Korea) Aug. 2021 – Feb. 2022

Assistant Professor at Edinburgh Napier University
School of Computing (United Kingdom) November 2015 – Dec. 2019

Visiting Professor at the Ludwig Maximilian University of Munich (LMU)
Funded by the Scottish Informatics and Computer Science Alliance August 2018

Visiting Professor at the Ulsan National Institute of Science and Technology
Funded by Samsung Electronics (Republic of Korea) May – June 2018

Founding Partner at Prsma September 2015 – Dec. 2017

Visiting Professor at Lancaster University
InfoLab21, School of Computing and Communications (UK) February – December 2016

Research Fellow at Siemens Corporation
Healthcare Technology Centre (USA) May – October 2015

Research Associate, Postdoctoral Fellow at Lancaster University
InfoLab21, School of Computing and Communications (UK) September 2014 – May 2015

Visiting Researcher at the Ulsan National Institute of Science and Technology
Interactions Lab, School of Design & Human Engineering (Republic of Korea) Feb. 2013 – Feb. 2014

Visiting Researcher at the Eindhoven University of Technology
User Centered Engineering, Department of Industrial Design (Netherlands) February – June 2012

Research Intern at the Korea Advanced Institute of Science and Technology
Telerobotics and Control Lab, Department of Mechanical Engineering (Republic of Korea) June – September 2011

Research Assistant at Carnegie Mellon | Portugal
Madeira Interactive Technologies Institute (Portugal) April 2010 – May 2011
Carnegie Mellon University (USA) July – September 2009

EDUCATION

Ph.D. Informatics Engineering (Human-Computer Interaction)
M.Sc. Informatics Engineering
B.Sc. Informatics Engineering
University of Madeira, Portugal

January 2015
July 2010
July 2008

ACTIVITY AND SERVICE

Board, Editor, and Steering Committee

Steering Committee Member for the ACM Int. Conference on Tangible, Embedded and Embodied Interaction

Steering Committee Member for the International Conference on Mobile and Ubiquitous Multimedia

Associate Editor for the International Journal of Human-Computer Studies (IJHCS)

Board Member of the Interactive Technologies Institute

Board Member of the Communication by Gaze Interaction (COGAIN) Association (*between 2023 and 2024*)

Organizing Committee

ACM International Conference on Tangible, Embedded and Embodied Interaction (TEI '16, '22, '27)

ACM Conference on Designing Interactive Systems (DIS '17, '25)

The 21st European Conference on Computer-Supported Cooperative Work (ECSCW '24)

ACM SIGCHI Conference on Computer-Supported Cooperative Work and Social Computing (CSCW '23)

ACM International Conference on Information Technology for Social Good (GoodIT '23)

International Symposium on Communication by Gaze Interaction (COGAIN '21-23)

International Conference on Mobile and Ubiquitous Multimedia (MUM '22)

ACM/IEEE International Conference on Human-Robot Interaction (HRI '20)

ACM SIGCHI Symposium on Spatial User Interaction (SUI '17)

Select Program Committee

ACM Symposium on User Interface Software and Technology (UIST '25)

ACM SIGCHI Conference on Human Factors in Computing Systems (CHI '17, '19-20, '23-25)

ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW '24)

ACM International Conference on Tangible, Embedded and Embodied Interaction (TEI '14-15, '19, '21, '24-25)

ACM International Conference on Creativity & Cognition (CC '19, '21-24)

European Tangible Interaction Studio (ETIS '22, '24)

ACM Conference on Designing Interactive Systems (DIS '20, '23)

ACM Symposium of Eye Tracking Research & Applications (ETRA '23) – *Short Papers*

IEEE International Conference on Artificial Intelligence & eXtended and Virtual Reality (AIxVR '20, '22, '24)

ACM International Conference on Multimodal Interaction (ICMI '20)

ACM SIGGRAPH Int. Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI '19)

ACM International Conference on Interactive Surfaces and Spaces (ISS '16, '18-19)

Select Workshops and Demos

7th *International Workshop on Everyday Virtual Reality* (35 participants)

IEEE Conference on Virtual Reality and 3D User Interfaces (2021)

1st *International Workshop on Cross-Reality Interaction* (38 participants)

ACM International Conference on Interactive Surfaces and Spaces (2020)

Other Service

Mentor on the ATHENS Network course on “Locomotion in Virtual Reality” at KU Leuven

Committee Member for the ACM Gary Marsden Travel Awards

Expert Evaluator for the European Institute of Innovation and Technology (EIT) Culture & Creativity

European Media and Immersion Lab (EMIL) Independent Expert Panel Member

Eureka's Eurostars Programme Technical Expert

Research Grant Reviewer (ESRC, SNSF, etc.)

Select Invited Talks, Seminars, and Guest Lectures

2025 *Immersive Speculative Enactments: Bringing Future Scenarios and Technology to Life Using VR*
UnitedXR Europe, Brussels

'24-25 *Interaction Design at the Intersection of Ubiquitous and Spatial Computing*
Media and Information, Michigan State University
Department of Human-Centered Computing, Indiana University

2023 *Defining a Fundamental Interaction Paradigm for eXtended Reality via Epistemic Action Detection*
Stereospia EUROPE and the XR4Europe Association

'19-22 *Five Years of Motion Matching Interfaces and Their Impact in Ubiquitous Computing*
Department of Computer Science and Engineering, University of Bologna
Department of Design, Ulsan National Institute of Science and Technology (UNIST)
Department of Computer Science and Engineering, Pohang University of Science and Technology
Department of Computer Science and Engineering, Ewha Womans University

What Challenges Await UX Practitioners in this New Age of Mixed-Reality?
ErgoUX 2020, Lisbon

'17-19 *Motion Matching: A New Interaction Paradigm for the IoT*
IXDS, Berlin
Centre for Design Informatics, University of Edinburgh
4th Aslla Symposium, Korea Institute of Science and Technology
Department of Computer and Information Sciences, Northumbria University

PhD Examinations

- 2025 Robbe Cools, KU Leuven (*Supervisor: Dr Adalberto L. Simeone*) – External Examiner
Nuno Filipe Verdelho Trindade (*Supervisor: Dr Alfredo Júnior*) – Internal Examiner
- 2024 Rui Rodrigues, Universidade Nova de Lisboa (*Supervisor: Prof. Nuno Correia*) – External Examiner
Pedro Rodrigues, Instituto Universitário Egas Moniz (*Supervisor: Dr José João Mendes*) – External Examiner
- 2023 Francisco Ferrari Calisto, University of Lisbon (*Supervisor: Prof. Nuno Nunes*) – Internal Examiner
- 2021 Alex Souza Carneiro, University of São Paulo (*Supervisor: Dr Carlos Morimoto*) – External Examiner
- 2019 Llogari Casas, Edinburgh Napier University (*Supervisor: Prof. Kenneth Mitchell*) – Internal Examiner

Current Supervision

- PhDs and Postdocs Sami Abosaleh, Adrián León, Inês Alves, Catarina Fidalgo¹, Andreia Valente², Eduardo Gomes³, Noha Mokhtar⁴, Chelsey Wickmark⁵, and Beatriz Lopes⁶
- MSc students Pedro Frigolet, Gil Arroteia, Bernardo Baltazar, Tiago Borbinha, João Severino, Jiaqi Yu, Pedro Cruz, João Bravo, João Brito, and Isabel Rosário

Past Supervisions

- Select BSc Eva Mackamul; Carl Bishop; *Jessica Bissett* (with Prof K. Mitchell, Disney Research); *Robin Piening*, *Philippe Schroeder*, and *Elizabeth Bouquet* (with Dr K. Pfeuffer, LMU Munich)
- Select MSc Juliana Marcelino, Henrique Águas, João Vaz, Tiago Quinteiro, Gonçalo Azevedo, João Maurício, Luís da Silva, Miguel Bernardino, Diogo Lopes, Nuno Estalagem, Felipe Benatti, Miguel Dias, Mariana Mendes, Andrew McKelvey, Daniel Gonçalves, Jacinto Graça; *Basanta Poudel* (with Dr C. Silva, European Commission's JRC); *Beatriz Alves* (with Dr C. Sylla, University of Minho); *Rúben Rodrigues* (with Dr F. Quintal, University of Madeira); *Ana David* (with Dr S. James, University of Durham, and Dr D. Giunchi, UCL); *Gianni Tumedei* (with Dr C. Prandi, University of Bologna); *Carlos Gomes* (with Major T. Guedes, Academia Militar); *João Antunes*, *Renée Venema*, *Olivier Van Houtte*, *Nick Van Dun*, *João Gomes*, *Wouter Mertens*, *Stan Depuydt*, and *Piet Goris* (with Dr A. Simeone, KU Leuven); *Ana Abreu* (with Dr A. Gomez, University of Portsmouth); *Ana de Oliveira* (with Dr M. Khamis, University of Glasgow); *Katharina Reiter* and *Stefanie Meitner* (with Dr K. Pfeuffer, LMU Munich); *David Verweij* (with Dr S. Bakker and Dr VJ Khan, Eindhoven University of Technology); *Renato Bernardino* and *Paulo Baula* (with Prof. I. Oakley, University of Madeira)
- PhDs and Postdocs Ivo Roupa; *Xi Wang* and *Gopal Jamnal* (with Prof. X. Liu, Edinburgh Napier University)
- RAs and Interns Pedro Tavares, Sebastião Sousa, Federica Vinella, Szymon Klinkoz, Hector Macleod, Pierre Ruiz, Frida Lindblad, Colin Thomson, and Nicholas Sawford; *Francesco Boschi* (with Dr C.

¹ Co-supervised with Dr David Lindlbauer (Carnegie Mellon University)

² Co-supervised with Prof Mark Billingham (University of Auckland)

³ Co-supervised with Dr Hugo Morais (INESC-ID) and Dr Lucas Pereira (LARSyS)

⁴ Co-supervised with Dr Hugo Nicolau

⁵ Co-supervisor with Dr Nadine Aburumman (Brunel University London)

⁶ Co-supervised with Dr Mary Barreto (UMA)

Prandi, University of Bologna); *Fábio Pacheco*, *Luís Brito*, and *Joaquim Perez* (with Dr F. Quintal, University of Madeira); *Martin Hering* and *Markus Wirth* (with Prof H. Gellersen⁷, Lancaster University); *Pedro Mendes*, *Fábio Luis*, and *Vitor Baptista* (with Dr F. Quintal and Dr M. Barreto, Prsma); *Rasel Islam* (with Prof I. Oakley⁷, UNIST)

HONORS

- 2024 Best Short Paper Award, ACM Symposium on Eye Tracking Research and Applications (ETRA '24)
- 2023 Outstanding Teaching Award, Depart. of Computer Science and Engineering, IST, University of Lisbon
- 2021 Outstanding Teaching Award, Depart. of Computer Science and Engineering, IST, University of Lisbon
- 2020 Outstanding Teaching Award, Depart. of Computer Science and Engineering, IST, University of Lisbon
- 2020 Excellent Reviewer Recognition, ACM Conference on Designing Interactive Systems (DIS '20)
- 2019 Best Paper Award, ACM Transactions on Computer-Human Interaction (TOCHI)
- 2017 Excellent Reviewer Recognition, ACM Conference on Human Factors in Computing Systems (CHI '17)
- 2016 Computing Reviews: Notable Computing Books and Articles of 2015
- 2015 Best Paper Award, ACM Symposium on User Interface Software and Technology (UIST '15)
- 2014 Marie Skłodowska-Curie Early-Stage Researcher (Scholarship, Computing and Communications)
- 2011 PhD studentship, Portuguese Foundation of Science and Technology (FCT)
- 2010 First place in the Fraunhofer Portugal Challenge 2010 (*for MSc thesis*)
- 2009 Semi-finalist in the Mobile Design category of the Adobe Design Achievement Awards 2009

TEACHING

Current Courses and Program Leadership

| | | |
|--|--|-------------------|
| Adv. Training Program (CMU Portugal) | UX Prototyping, Human-AI Interaction | <i>since 2024</i> |
| Adv. Training Program (CMU Portugal) | User Experience and Service Design Program | <i>since 2024</i> |
| Graduate | User-Centred Design | <i>since 2022</i> |
| Undergraduate | Human-Computer Interaction | <i>since 2019</i> |

Past Courses

| | | |
|---------------|--|--|
| Graduate | IxD Studio (<i>in 2014 and 2023</i>), VR (<i>between 2019-20</i>), Divergent Interaction (<i>in 2016</i>) | |
| Undergraduate | Mobile Apps Development (<i>in 2019</i>), Playful Interaction (<i>between 2016-19</i>), UbiComp (<i>between 2016-19</i>), Responsive Environments (<i>in 2019</i>), and Vector Graphics (<i>in 2014</i>) | |

Past Program Leadership

- 2016 BSc (Hons) Computing and User Experience, Edinburgh Napier University (*until 2019*)

SELECT MEDIA

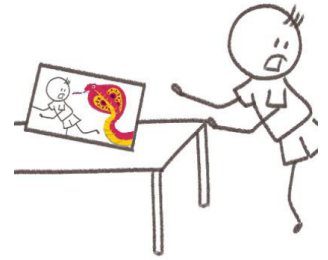
- 2017 Esteves, A. (2017, October 18). When VR meets reality – how live concerts could be enhanced by 21st-century opera glasses. Retrieved from <http://www.independent.co.uk/life-style/gadgets-and-tech/how-live-concerts-could-be-enhanced-by-21st-century-opera-glasses-a8002606.html>

Esteves, A. (2017, October 10). When VR meets reality – how live concerts could be enhanced by 21st-century opera glasses. Retrieved from <http://theconversation.com/when-vr-meets-reality-how-live-concerts-could-be-enhanced-by-21st-century-opera-glasses-85409>

⁷ Temporary co-supervision on my part.

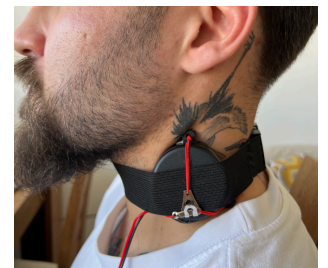
Supporting Creative Thinking in Storytelling with Augmented Reality, ITI / LARSyS, IST, ULisbon

Storytelling is vital for a child's development, yet many children hesitate to create their own stories due to lack of inspiration or interest. Existing technological tools are often too complex or require specialized equipment, posing further challenges to story creation and limiting creativity. To address these difficulties, we developed a mobile AR application to support story creation. Our user study with a class of fourth-graders revealed that participants found the AR environment engaging, emphasizing the importance of agency and artistic expression in storytelling.



Modulating Heart Activity and Task Performance using Haptic Heartbeat Feedback: A Study Across Four Body Placements, ITI / LARSyS, IST, University of Lisbon

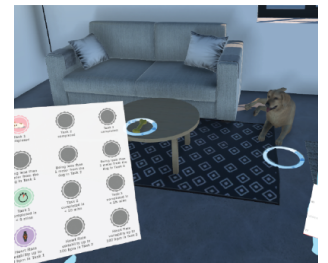
This work explores the impact of vibrotactile haptic feedback on heart activity when the feedback is provided at four different body locations and with two feedback rates. A user study found that the neck placement resulted in higher heart rates and lower heart rate variability, and higher frequencies correlated with increased heart rates and decreased heart rate variability. The chest was preferred in self-reported metrics, and neck placement was perceived as less satisfying, harmonious, and immersive.



<https://youtu.be/EOf0NUL2Ciw>

MeetingBenji: Tackling Cynophobia with Virtual Reality, Gamification, and Biofeedback ITI / LARSyS, IST, University of Lisbon

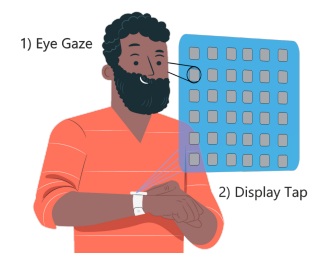
MeetingBenji is a virtual reality exposure therapy system for cynophobia that uses (i) gamification to enhance motivation and engagement, and (ii) biofeedback to facilitate self-control and reduce physiological responses. In a study (N=10) that compared the effects of displaying dogs in 3D scenes and 360° videos using the Behavioural Approach Test, participants reported feeling more anxiety with 3D content than 360° video (60%), lower heart rates in the presence of biofeedback (between 1.71% and 7.46%), and improved self-control across the three exposure levels.



<https://youtu.be/3d9ViuK41yo>

Between Wearable and Spatial Computing: Exploring Four Interaction Techniques at the Intersection of Smartwatches and Head-mounted Displays, ITI / LARSyS, IST, University of Lisbon

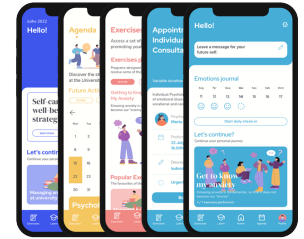
In this project we introduce four bi-directional interaction techniques that sit between smartwatches and head-mounted displays (HMDs): gaze dwell, gaze and tap, mid-air touch, and trackpad. Our goal is to expand the input and output space of smartwatches while leveraging this as a familiar anchor for digital content that also provides HMDs with an inconspicuous and available input space. In an initial study (N=12) we characterize user performance, experience, and preference with the techniques in a task involving discrete and list-based selections, where interface targets were anchored to participants' wrists and heads.



Designing for Mental Health in Higher Education: a Collaborative Approach to Digital Interventions

ITI / LARSyS, IST, University of Lisbon

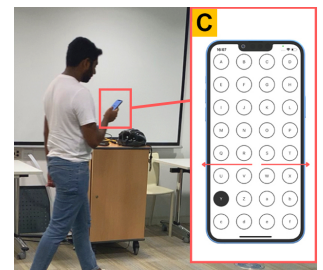
Here we present the outcomes of a process of co-design and validation of a digital mental health intervention in a university setting. We draw on findings from (1) design cycles and (2) validation workshops of a digital intervention to identify preferences of engagement and ethical responsibility for real-world applicability. Our findings emphasise the importance of involving end-users and clinicians throughout the process to improve existing support systems for students' well-being, challenge stigma, and promote context-sensitive mental health care in academia.



Comparing Dwell time, Pursuits and Gaze Gestures for Gaze Interaction on Handheld Mobile Devices

ITI / LARSyS, IST, University of Lisbon

This project presents the first experiment in a mobile setting that compares three of the most commonly used gaze interaction methods while sitting and walking: Dwell, Pursuits, and Gaze gestures. Results show that input using Pursuits is faster than Dwell and Gaze gestures, especially when many targets are on-screen. Users prefer Pursuits when stationary, but prefer Dwell when walking. While selection using Gaze gestures is more demanding and slower when there are many targets, it is suitable for contexts where accuracy is more important than speed.



<https://youtu.be/YgEl5WbTDaQ>

Blending Spaces: Cross-Reality Interaction Techniques for Object Transitions Between Distinct Virtual and Augmented Realities, ITI / LARSyS, IST, University of Lisbon

Cross-Reality involves interaction between different modalities and levels of immersion such as Virtual and Augmented Reality. Whereas previous work assumed similarity between their respective Virtual and Augmented Environment (VE and AE), we explore the case in which VE and AE are distinct. This gives rise to novel and critical problems, such as how to visualise and interact with the other environment. In this context we investigate the fundamental interaction of transitioning an object across environments, to which we contribute five interaction techniques.



<https://youtu.be/BqwdRGxvWkA>

A First Exploration on the Use of Head-Mounted Augmented Reality in the Context of the Portuguese Military, ITI / LARSyS, IST, University of Lisbon

We present the design and implementation of a first iteration of an augmented reality (AR) system for dismounted soldiers in the Portuguese military. When compared to a representative baseline using a paper map and radio in a hostage extraction simulation, our first AR iteration, and despite a short practice session, increased the quality of the information available and decreased the complexity, temporal demands, and effort required to complete the study tasks; leading to an overall decrease in perceived workload. Overall, participants described the AR experience as more user-friendly.



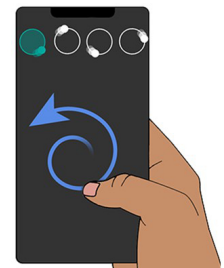
<https://youtu.be/TnZbPvQ5IKg>

One-handed Input for Mobile Devices via Motion Matching and Orbits Controls

ITI / LARSyS, IST, University of Lisbon

We introduce a novel one-handed input technique for mobile devices that is not based on pointing, but on motion matching – where users select a target by mimicking its unique animation. We expand on current motion matching implementations and present a design space that illustrates six ways in which motion matching can be embedded into mobile interfaces via a camera prototype application.

<https://youtu.be/ZQg70bXqh8M>



Empathic AuRea: Exploring the Effects of an Augmented Reality Cue for Emotional Sharing Across Three Face-to-Face Tasks

ITI / LARSyS, IST, University of Lisbon

Past emotional sharing works have elicited emotional understanding between remote collaborators using bio-sensing, but how face-to-face communication can benefit from biofeedback is still fairly unexplored. This work introduces an AR communication cue from an emotion recognition neural network model and ECG data. A study where pairs of participants engaged in three tasks found our system to positively affect performance and emotional understanding, but negatively affect memorization.

<https://youtu.be/5BTiwRZgcds>



Immersive Speculative Enactments: Bringing Future Scenarios and Technology to Life Using VR

ITI / LARSyS, IST, University of Lisbon

In this work we present the concept of Immersive Speculative Enactments (ISEs), a novel approach extending conventional Speculative Enactments to Virtual Reality. To explore this concept, we designed four scenarios with increasing technological uncertainty. We present the concept of ISEs and contrast them to other forms of speculation, provide guidelines on how to design them, as well as reflecting on the challenges, limitations, and potential associated with the role of ISEs in the HCI.

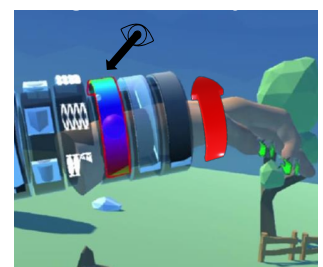
<https://youtu.be/vA4Px06Jnuk>



Look & Turn: One-handed and Expressive Menu Interaction by Gaze and Arm Turns in VR

ITI / LARSyS, IST, University of Lisbon

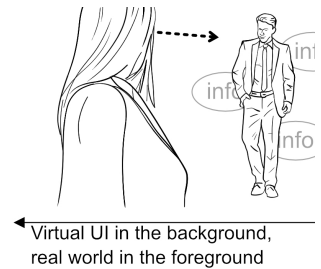
A user's free hands provide an intuitive platform to position and design virtual menu interfaces. We explore how the hands and eyes can be integrated in the design of hand-attached menus: gaze indicates menu selection, and rotational turn of the wrist navigates the menu and manipulates continuous parameters. This technique allows users to interact with the hand-attached menu using only that hand, while keeping the other free for primary task input such as drawing, etc.



ARtention: A Design Space for Gaze-adaptive User Interfaces in Augmented Reality

ITI / LARSyS, IST, University of Lisbon

ARtention is a design space for gaze interaction tailored to in-situ AR information interfaces. It highlights three important dimensions to consider in the UI design of such gaze-enabled applications. Such transitional aspects bring previously isolated gaze interaction concepts together to form a unified AR space, enabling more advanced application control mediated by gaze.



https://youtu.be/A_gUI4dhehc

From A-Pose to AR-Pose: Animating Characters in Mobile AR

ITI / LARSyS, IST, University of Lisbon

AR-Pose is a mobile app that generates keyframe-based animations of rigged humanoid characters. The smartphone's positional and rotational degrees of freedom are used as a 3D cursor to interact with inverse kinematic controllers placed on or near the character's joints; and as a virtual camera that enables users to freely move around.

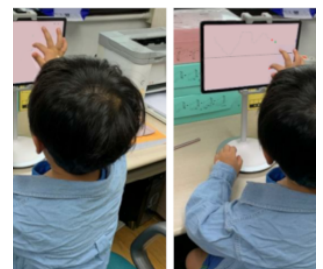


<https://youtu.be/UqW9qr8sWPo>

DtD: Pre-reading Assessment of Literacy Risk via a Visual-Motor Mechanism on Touchscreen Devices

ITI / LARSyS, IST, University of Lisbon

In this work we expand on Dot-to-Dot (DtD), a non-linguistic visual-motor mechanism aimed at facilitating the detection of the potential reading difficulties of children at pre-reading age. Our findings suggest that there is a significant correlation among DtD task and a series of language tests. We conclude the work by suggesting different ways in which DtD could be embedded into everyday mobile devices.



GaitWear: a Smartwatch App for In-the-Wild Gait Normalisation based on a Virtual Field Study Assessing the Effects of Visual & Haptic Cueing, ITI / LARSyS, IST, University of Lisbon

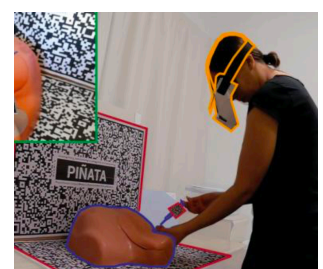
We explored the use of VR to simulate field studies via what is known as Virtual Field Studies. We relied on this to assess the effects of four different cues in normalising gait performance in a simulated environment. We found that the haptic baseline was the preferred cue and led to an overall better performance. We concluded our work with GaitWear, a smart watch app that produces this haptic baseline in the real-world.



PIÑATA: Pinpoint Insertion of Intravenous Needles via Augmented Reality Training Assistance

ITI / LARSyS, IST, University of Lisbon

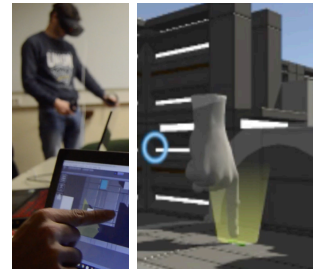
The purpose of this work is to explore the benefits of optical see-through augmented-reality (OST-AR) in needle insertion training and to verify if the proposed OST-AR tool complements conventional training practices. A comparison study was conducted between our tool and the conventional method to train central venous catheter (CVC) insertion using a dummy of the upper torso and neck. The overall results show that the OST-AR tool proposed can complement conventional training.



Exploring Bi-Directional Pinpointing Techniques for Cross-Reality Collaboration

ITI / LARSyS, IST, University of Lisbon

In this work we implemented two systems where we explore how an external user in the real world can interact across realities with a user immersed in virtual reality (VR), either locally or remotely. In the first we investigate three cross-reality techniques for the external user to draw the attention of their VR counterpart on specific objects present in the virtual environment. In the second we expand on these two techniques to explore an even starker cross-reality interaction between users in VR and users interacting via a tablet computer to direct each other to pinpoint objects in the scene.



Comparing Selection Mechanisms for Gaze Input Techniques in Head-mounted Displays

ITI / LARSyS, IST, University of Lisbon

Head movements are a common input modality on VR/AR headsets. However, although they enable users to control a cursor, they lack an integrated method to trigger actions. Many approaches exist to fill this gap: dedicated “clickers”, on-device buttons, mid-air gestures, dwell, speech, and new input techniques such as motion matching. These proposals are diverse and there is a current lack of empirical data on the performance of, experience of, and preference for these different techniques. We conduct two studies that address this problem.

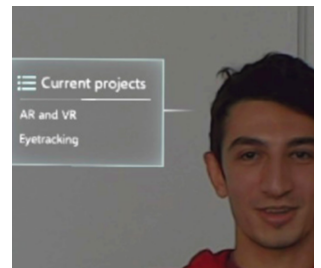


StARe: Gaze-Assisted Face-to-Face Communication in AR

ITI / LARSyS, Instituto Superior Técnico, University of Lisbon

This research explores the use of eye-tracking during AR supported conversations. Users can obtain relevant information to the conversation without being distracted by this. We propose using gaze gradually reveal information on demand. Information is indicated around the user's head and becomes fully visible when being gazed upon.

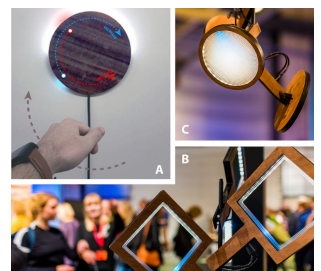
<https://youtu.be/GyQG2Zb8V1w>



Designing Motion Matching for Real-World Applications

Centre for Interaction Design, Edinburgh Napier University

This work explores the product possibilities and implications of motion matching, a novel interaction technique where users interact by rhythmically moving their bodies to track the continuous movements of different interface targets. Through the development and qualitative study of four novel and different real-world applications, we elaborated on the suitability of motion matching in different multi-user scenarios and further developed three interactive lamps with motion matching controls.



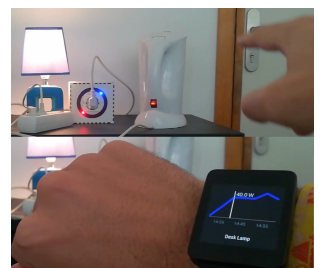
<https://youtu.be/7KIW18pbyng>

Wattom: a Consumption and Grid Aware Smart Plug with Mid-Air Controls

Centre for Interaction Design, Edinburgh Napier University

Wattom is an interactive ambient eco-feedback smart plug that aims to support a more sustainable use of electricity by being tightly coupled to users' energy-related activities. We describe three use cases of the system: powering connected appliances and understand the environmental impact of their use in real time; scheduling these power events; and presenting users with personal consumption data desegregated by device.

<https://youtu.be/LtYrlFp91fY>

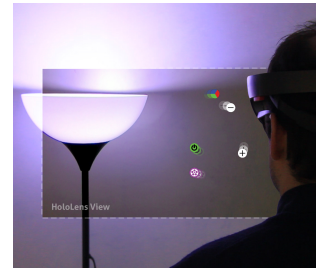


SmoothMoves: Smooth Pursuits Head Movements for Augmented Reality

Centre for Interaction Design, Edinburgh Napier University

SmoothMoves is an interaction technique for AR based on smooth pursuits head movements. It works by computing correlations between the movements of on-screen targets and the user's head while tracking those targets. We report error rates and acquisition times on different types of AR devices and present an interactive lighting system prototype that demonstrates the real-world benefits of our system.

<https://youtu.be/vd4tXIetAz4>

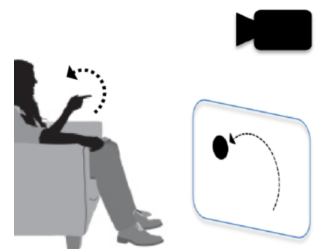


Remote Control by Body Movement in Synchrony with Orbiting Widgets

Centre for Interaction Design, Edinburgh Napier University

We consider how users can use body movement for remote control with minimal effort and maximum flexibility. TraceMatch is a novel technique where the interface displays available controls as circular widgets with orbiting targets, and where users can trigger a control by mimicking the displayed motion. The technique uses computer vision to detect circular motion as a uniform type of input, but is highly appropriable as users can produce matching motion with any body part.

<https://youtu.be/ffRmXRGcC5M>

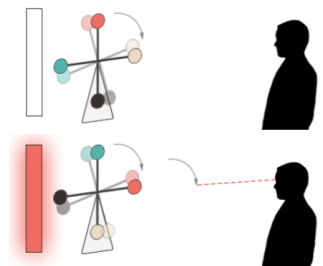


AmbiGaze: Direct Control of Ambient Devices by Gaze

Centre for Interaction Design, Edinburgh Napier University

AmbiGaze is a smart environment that employs the animation of targets to provide users with direct control of devices by gaze only through smooth pursuit tracking. AmbiGaze enables robust gaze-only interaction with many devices, from multiple positions in the environment, in a spontaneous and comfortable manner.

<https://youtu.be/CoIR6FFEGS4>



Head-Mounted Displays as Opera Glasses

Centre for Interaction Design, Edinburgh Napier University

This work explores the use of head-mounted displays (HMDs) to deliver a front row experience to any audience member during a live event. To do so, it presents a two-part user study that compares participants reported sense of presence across three experimental conditions. The reported sense of presence in the HMD condition was significantly higher in five measures including spatial presence, social presence (SP), passive SP, active SP, and social richness.



The ATB Framework

Interactions Lab, Ulsan National Institute of Science and Technology

The ATB (Artifact, Tool, and Body) framework contributes to our understanding of how epistemic actions are used in human problem-solving tasks, providing researchers with a video-coding tool to assess this complex type of behaviour more systematically. It is intended as a mechanism to evaluate tangible systems in terms of the type, diversity, and appropriateness of the epistemic actions they support, and in terms of the impact these actions can have on more traditional metrics such as performance time or errors.



A Look at the Effects of Handheld and Projected AR on a Collaborative Task

Centre for Interaction Design, Edinburgh Napier University

We designed a comparative study between handheld and projected AR systems during a collocated, collaborative game-inspired task. The goal of the work is to start a body of knowledge that describes the effects of different AR approaches in users' experience and performance – i.e., to look at AR not as a single entity with uniform characteristics. This includes engagement, collaboration strategies, and performance.



Looking for Info: Evaluation of Gaze Based Information Retrieval in Augmented Reality

ITI / LARSyS, IST, University of Lisbon

This work presents the results of an empirical study and a real-world deployment of a gaze-adaptive UI for AR. We present an empirical study comparing gaze-adaptive to always-on interface in tasks that vary focus between reality and virtual content. Across tasks, we find most participants prefer the gaze-adaptive UI and find it less distracting. When focusing on reality, the gaze UI is faster and is perceived as easier and more intuitive. When focusing on virtual content, access to always-on content is faster but it is not consensual among users.

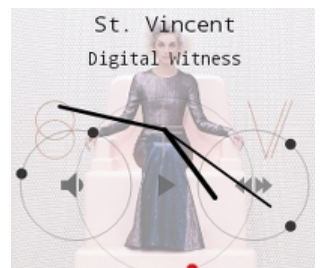


<https://youtu.be/IQjZhArMGU4>

Orbits: Gaze Interaction for Smart Watches

InfoLab21, Lancaster University

Orbits is a novel technique that enables gaze-only input in a design that accounts for both the limited display space of smart watches and the spontaneous nature of glancing at a watch. Orbits relies on interface controls with targets that move continuously in circular trajectories. They can be used for both discrete and continuous control.



<https://youtu.be/x6hbicxEFbg>

Beats: Tapping Gestures for Smart Watches

Interactions Lab, Ulsan National Institute of Science and Technology

Beats is a new type of multi-finger input that is specifically designed for the very small touch screens of smartwatches. It is based on what we term beating gestures, pairs of simultaneous or rapidly sequential touches (and optionally one or more releases) made by the index and middle finger of one hand.



https://youtu.be/7Dkbfv_JQD0

Touchcloud

Interactions Lab, Ulsan National Institute of Science and Technology

Touchcloud is a novel service that enables users to tag their physical environment with their Dropbox files. This is achieved through a set of bespoke NFC stickers and an application running on NFC-enabled Android mobile phones. The system is simple. Firstly, users attach the stickers to, on or in objects in their environment. Secondly, they choose specific Dropbox files or folders to physically tag and select the Touchcloud command from a context menu.

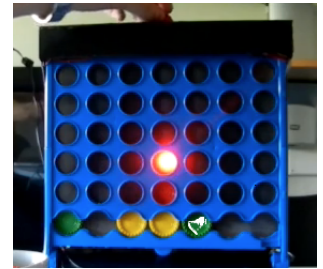


<https://youtu.be/9HkVjIG10eE>

Physical Games or Digital Games?

User Centred Engineering, Eindhoven University of Technology

This work explored how different interfaces to a problem-solving task affect how users perform it. Specifically, it focused on a customised version of the game of Four-in-a-row and compared play on a physical, tangible game board with that conducted in mouse and touchscreen driven virtual versions. Our results highlight the relevance of projection and epistemic action to this problem-solving task and suggest that the different interface forms afford instantiation of these activities in different ways.



jamTable: Can Physical Interfaces Support the Collaboration between Novice and Experienced Musicians? Centre of Exact Sciences and Engineering, University of Madeira

jamTable enables the collaboration between users playing a standard musical instrument and users interacting with a tangible musical sequencer. In an introductory study both qualitative and quantitative data were collected from eight participants in two setup conditions: Musician-Musician and Novice-Musician pairs. By comparing the performance of participants in these two groups, we gathered relevant insights regarding the ability of a tangible musical application such as the jamTable to support musical collaborations between novice and experienced musicians.



PUBLICATIONS

Lopes, D. & Esteves, A. 2025. GazeMatch: Drawing on the Benefits of Motion Matching Gaze Interfaces without Extensive Refactoring of Existing Public Display UIs. *Proc. ACM Hum.-Comput. Interact.* 9, 8, Article ISS012 (December 2025), 20 pages.

Shin, Y., Esteves, A., & Oakley, I. 2025. Using Augmented Reality on the Go: Understanding the Effects of Mobility on User Performance and Subjective Workload Across Eye, Head, and Hand Ray Pointing. *International Journal of Human-Computer Studies*, 103597.

Cools, R., Han, J., Esteves, A., & Simeone, A. L. 2025. From Display to Interaction: Design Patterns for Cross-Reality Systems. *IEEE Transactions on Visualization and Computer Graphics*, vol. 31, no. 5, pp. 3129-3139.

David, A., Giunchi, D., James, S., Steed, A., & Esteves, A. 2025. PaintBranch: Asynchronous Collaborative Art in Virtual Reality. In *2025 IEEE Conference on VR and 3D User Interfaces Abstracts and Workshops* (pp. 320-321). IEEE.

Valencia, A. J. L., Oakley, I., & Esteves, A. 2025. Multimodal Hands-Free VR For Wheelchair Users With Upper Limb Mobility Limitations: Leaning, Head-Gain, and Gaze Pointing. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)* (pp. 124-128). IEEE.

Alves, B., Esteves, A., & Sylla, C. M. 2025. Supporting Creative Thinking in Storytelling with Augmented Reality. In *Proceedings of the 24th Interaction Design and Children*. Association for Computing Machinery, NY, USA, 658–671.

Severes, B., Bala, P., Piedade, P., Gomes, E., Esteves, A., & Barreto, M. 2025. Making Sense of Our Data: Exploring Well-Being Self-Tracking Through Creative Collaboration. In *Proceedings of the 2025 Conference on Creativity and Cognition (C&C '25)*. Association for Computing Machinery, New York, NY, USA, 182–197

Gomes, E., Esteves, A., Morais, H., & Pereira, L. 2025. Leveraging explainable artificial intelligence in solar photovoltaic mappings: Model explanations and feature selection. *Energies*, 18(5), 1282.

Valente, A., Lee, D., Choi, S., Billingham, M., & Esteves, A. 2024. Modulating Heart Activity and Task Performance using Haptic Heartbeat Feedback: A Study Across Four Body Placements. 2024. In *Proceedings of the*

ACM Symposium on User Interface Software and Technology (UIST '24). Association for Computing Machinery, New York, NY, USA, 1–12.

Alves, I. and Esteves, A. 2024. MeetingBenji: Tackling Cynophobia with Virtual Reality, Gamification, and Biofeedback. In *Proceedings of the 30th ACM Symposium on Virtual Reality Software and Technology* (VRST '24). Association for Computing Machinery, New York, NY, USA, 1–7.

Severes, B., Barreto, M., & Esteves, A. 2024. Designing for mental health in higher education: a collaborative approach to digital interventions. *Behaviour & Information Technology*, 1-19.

Estalagem, N. and Esteves, A. 2024. Between Wearable and Spatial Computing: Exploring Four Interaction Techniques at the Intersection of Smartwatches and Head-mounted Displays. In *Proceedings of the 2024 Symposium on Eye Tracking Research and Applications* (ETRA '24). Association for Computing Machinery, New York, NY, USA, Article 57, 1–7. [**Best Short Paper Award**]

Mokhtar, N. and Esteves, A. 2024. Hand Me This: Exploring the Effects of Gaze-driven Animations and Hand Representations in Users' Sense of Presence and Embodiment. In *Proceedings of the 2024 Symposium on Eye Tracking Research and Applications* (ETRA '24). Association for Computing Machinery, New York, USA, Article 59, 1–7.

Cools, R., Venema, R., Esteves, A., & Simeone, A. L. 2024. The Impact of Near-Future Mixed Reality Contact Lenses on Users' Lives via an Immersive Speculative Enactment and Focus Groups. In *Proceedings of the 2024 ACM Symposium on Spatial User Interaction* (SUI '24). Association for Computing Machinery, NY, USA, Article 9, 1–13.

Namnakani, O., Abdrabou, Y., Grizou, J., Esteves, A., and Khamis, M. 2023. Comparing Dwell time, Pursuits and Gaze Gestures for Gaze Interaction on Handheld Mobile Devices. In *CHI Conference on Human Factors in Computing Systems* (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 258, 1–17.

Gomes, C., Guedes, T., and Esteves, A. 2023. A First Exploration on the Use of Head-Mounted Augmented Reality in the Context of the Portuguese Militar. *Proc. ACM Hum.-Comput. Interact.* 7, MHCI, Article 192 (September 2023), 11 pages. [**2nd Place in the Integrated System of Emergency and Security Networks of Portugal (SIRESP) Innovation Challenge**]

Nisi, V., Prandi, C., Ma, S., Ferreira, M., Nicolau, H., Esteves, A., and Nunes, N. 2023. The design of Tecnico GO!: catering for students' well-being during the COVID-19 pandemic. *Multimedia Tools and Applications*, 1-23.

Gomes, E., Pereira, L., Esteves, A., and Morais, H. 2023. PyECOM: A Python tool for analyzing and simulating Energy Communities. *SoftwareX*, 101580.

Letondal, C., Tabard, A., Bornes, L., Esteves, A., Hachet, M., Maquil, V., and Roudaut, A. 2023. Tangible Interaction and Industrial Degrowth: Follow-up of a panel on environmental issues in tangible interfaces at ETIS 2022. *HCI for Climate Change. Imagining Sustainable Futures. CHI 2023*, E. Mencarini, Apr 2023, Hamburg, Germany.

Severes, B., Barreto, M., and Esteves, A. 2023. Towards Resilience: Strategies for Enhancing Mental Health Among University Students. *Designing for and Reflecting upon Resilience in Health and Wellbeing. DIS 2023*, Xinning Gui, Jul 2023, Pittsburgh, USA.

Kuosmanen, E., Huusko, E., van Berkel, N., Nunes, F., Vega, J., Gonçalves, J., Khamis, M., Esteves, A., Ferreira, D., and Hosio, S. 2023. Exploring crowdsourced self-care techniques: A study on Parkinson's disease. *International Journal of Human-Computer Studies*, 103062.

Esteves, A., Bouquet, E., Pfeuffer, K., and Alt, F. 2022. One-handed Input for Mobile Devices via Motion Matching and Orbits Controls. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* (IMWUT '22), 6(2), Article 51, 1-24.

- Cools, R., Esteves, A., and Simeone, A. 2022. Blending Spaces: Cross-Reality Interaction Techniques for Object Transitions Between Distinct Virtual and Augmented Realities. In *2022 IEEE International Symposium on Mixed and Augmented Reality (ISMAR '22)*, 528–537.
- Simeone, A., Cools, R., Depuydt, S., Gomes, J., Goris, P., Grocott, J., Esteves, A., and Gerling, K. 2022. Immersive Speculative Enactments: Bringing Future Scenarios and Technology to Life Using Virtual Reality. In *CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, NY, USA, Art. 17, 1–20.
- Valente, A., Lopes, D., Nunes, N., and Esteves, A. 2022. Empathic AuRea: Exploring the Effects of an Augmented Reality Cue for Emotional Sharing Across Three Face-to-Face Tasks. In *2022 IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR '22)*, 158–166.
- Barreto, M., Casado-Mansilla, D., Esteves, A., and Quintal, F. 2022. Designing Smart Plugs for Interactivity and Energy Sustainability via a Survey and Thematic Analysis. In *Nordic Human-Computer Interaction Conference (NordiCHI '22)*. Association for Computing Machinery, New York, NY, USA, Article 13, 1–12.
- Quintal, F., Casado-Mansilla, D., and Esteves, A. 2022. Socio-economic information and preferred interaction modalities related to eco-feedback systems [Data set]. Zenodo.
- Reiter, K., Pfeuffer, K., Esteves, A., Mittermeier, T., and Alt, F. 2022. Look & Turn: One-handed and Expressive Menu Interaction by Gaze and Arm Turns in VR. In *2022 Symp. on Eye Tracking Research and Applications (ETRA '22)*. Association for Computing Machinery, New York, NY, USA, Article 66, 1–7.
- Ma, S., Ferreira, M., Nicolau, H., Prandi, C., Esteves, A., Nunes, N. J., & Nisi, V. 2022. Catering for Students' Well-being during COVID-19 Social Distancing: a Case Study from a University Campus. In *Proceedings of the 2022 ACM Conference on Information Technology for Social Good (GoodIT '22)*. Association for Computing Machinery, New York, NY, USA, 146–153.
- Ma, S., Nisi, V., Esteves, A., Prandi, C., Nicolau, H., Tumedei, G., Nogueira, J., Boschi, F., and Nunes, N. 2022. Crowdsensing-enabled Service Design for Floating Students during the COVID-19 Pandemic. In *Congress of the International Association of Societies of Design Research (IASDR '21)*. Springer, Singapore, 943-959.
- Pfeuffer, K., Abdrabou, Y., Esteves, A., Rivu, R., Abdelrahman, Y., Meitner, S., (...) and Alt, F. 2021. ARtention: A Design Space for Gaze-adaptive User Interfaces in Augmented Reality. *Computers & Graphics*, 95, 1–12
- de Oliveira, A., Khamis, M. and Esteves, A., 2021. GaitWear: a smartwatch application for in-the-wild gait normalisation based on a virtual field study assessing the effects of visual and haptic cueing. *Behaviour & Information Technology*, 40(12), 1292-1309.
- Tumedei, G., Boschi, F., Prandi, C., Gomes, L., Calheno R., Abreu R., Ma S., Nisi V., Nunes N. and Esteves, A. 2021. Promoting a Safe Return to University Campuses during the COVID-19 Pandemic: Crowdsensing Room Occupancy. In *Proceedings of the Conference on Information Technology for Social Good (GoodIT '21)*. Association for Computing Machinery, New York, NY, USA, 145–150.
- Valente, A., Esteves, A. and Lopes, D., 2021. From A-Pose to AR-Pose: Animating Characters in Mobile AR. In *ACM SIGGRAPH 2021 Appy Hour (SIGGRAPH '21)*. Association for Computing Machinery, New York, NY, USA, Article 4, 1–2.
- Park, W., Revés, P., Esteves, A., Kerridge, J., Yim, D. and Oh, U. 2021. Dot-to-Dot (DtD): Pre-Reading Assessment of Literacy Risk via a Tracing Mechanism on Touchscreen Devices. In Ardito C. et al. (eds) *Human-Computer Interaction – INTERACT 2021*. Lecture Notes in Computer Science, vol 12932. Springer, Cham.
- Piening, R., Pfeuffer, K., Esteves, A., Mittermeier, T., Prange, S., Schroeder, P. and Alt, F. 2021. Looking for Info: Evaluation of Gaze Based Information Retrieval in Augmented Reality. In Ardito C. et al. (eds) *Human-Computer Interaction – INTERACT 2021*. Lecture Notes in Computer Science, vol 12932. Springer, Cham.

- Prakhasan, P., Belchior, P., Prates, R., Silveira, F., Lopes, D., Cools, R., Esteves, A. and Simeone, A. 2021. Exploring Bi-Directional Pinpointing Techniques for Cross-Reality Collaboration. In *2021 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*.
- Esteves, A., Shin, Y. and Oakley, I. 2020. Comparing Selection Mechanisms for Gaze Input Techniques in Head-mounted Displays. *International Journal of Human-Computer Studies* 139: 102414.
- Mendes, H., Costa, C., Silva, N., Leite, F., Esteves, A. and Lopes, D. 2020. PIÑATA: Pinpoint Insertion of Intravenous Needles via Augmented Reality Training Assistance. *Comp. Medical Imaging and Graphics* 82: 101731.
- Oliveira, A., Khamis, M. and Esteves, A. 2020. Using a VR Field Study to Assess the Effects of Visual and Haptic Cues in "In-the-Wild" Locomotion. In *Cross-Reality (XR) Interaction, ACM ISS 2020 (International Workshop on XR Interaction 2020)*. ACM, New York, NY, USA, 5 pages.
- Rivu, R., Abdrabou, Y., Pfeuffer, K., Esteves, A., Meitner, S. and Alt, F. 2020. StARe: Gaze-Assisted Face-to-Face Communication in Augmented Reality. In *ACM Symposium on Eye Tracking Research and Applications (ETRA '20 Adjunct)*, 1–5.
- Simeone, A. L., Khamis, M., Esteves, A., Daiber, F., Kljun, M., Čopić Pucihar, K., Isokoski, P. and Gugenheimer, J. 2020. International Workshop on Cross-Reality (XR) Interaction. In *Companion Proceedings of the 2020 Conference on Interactive Surfaces and Spaces* (pp. 111-114).
- Verweij, D., Esteves, A., Bakker, S., and Khan, V.J. 2019. Designing Motion Matching for Real-World Applications: Lessons from Realistic Deployments. In *Proceedings of the 13th International Conference on Tangible, Embedded and Embodied Interaction (TEI '19)*. ACM, New York, NY, USA, 645-656.
- Quintal, F., Esteves, A., Caires, F., Baptista, V., and Mendes, P. 2019. Wattom: A Consumption and Grid Aware Smart Plug with Mid-air Controls. In *Proceedings of the 13th International Conference on Tangible, Embedded and Embodied Interaction (TEI '19)*. ACM, New York, NY, USA, (pp. 307-313).
- Esteves, A., Quintal, F., Caires, F., Baptista, V., and Mendes, P. 2019. Wattom: Ambient Eco-feedback with Mid-air Input. In *Proceedings of the IEEE 5th Experiment@ International Conference (exp.at '19)*. IEEE, (pp. 12-15).
- Mackamul, E. and Esteves, A. 2018. A Look at the Effects of Handheld and Projected Augmented-reality on a Collaborative Task. In *Proceedings of the Symposium on Spatial User Interaction (SUI '18)*. ACM, NY, USA, (pp. 74-78).
- Clarke, C., Bellino, A., Esteves, A., and Gellersen, H. 2017. Remote Control by Body Movement in Synchrony with Orbiting Widgets: an Evaluation of TraceMatch. In *Proceedings of the ACM Conference on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '17)*. 1, 3: 45:1–45:22.
- Esteves, A., Verweij, D., Suraiya, L., Islam, R., Lee, Y., and Oakley, I. 2017. SmoothMoves: Smooth Pursuits Head Movements for Augmented Reality. In *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST '17)*. ACM, New York, NY, USA, (pp. 167-178).
- Bishop, C., Esteves, A., and McGregor, I. 2017. Head-Mounted Displays as Opera Glasses: Using Mixed-Reality to Deliver an Egalitarian User Experience During Live Events. In *Proceedings of 19th ACM International Conference on Multimodal Interaction (ICMI'17)*. ACM, New York, NY, USA, (pp. 360-364).
- Velloso, E., Carter, M., Newn, J., Esteves, A., Clarke, C. and Gellersen, H. 2017. Motion Correlation: Selecting Objects by Matching Their Movement. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 24(3), 22. **[Featured in TOCHI's The Editor's Spotlight] [Best Paper Award]**
- Verweij, D., Esteves, A., Khan, V.J., and Bakker, S. 2017. WaveTrace: Motion Matching Input using Wrist-Worn Motion Sensors. In *Extended Abstracts of 35th Annual ACM Conference on Human Factors in Computing Systems (CHI*

'17). ACM, New York, NY, USA, (pp. 2180-2186). [**Research Award by Design United**] [**Selected for Exhibition at the Dutch Design Week 2017**].

Quintal, F., Barreto, M., Luis, F., Baptista, V., and Esteves, A. 2017. Studying the Immediacy of the Eco-Feedback Through Plug Level Consumption Information. In *the Fifth IFIP Conference on Sustainable Internet and ICT for Sustainability* (SustainIT '17). [**Best Work-in-Progress Award – Audience Choice**]

Verweij, D., Esteves, A., Khan, V.J., and Bakker, S. 2017. Smart Home Control using Motion Matching and Smart Watches. In *Proceedings of the 2017 ACM International Conference on Interactive Surfaces and Spaces* (ISS '17). ACM, New York, NY, USA, (pp. 466-468).

Verweij, A., Khan, V.J., Esteves, A., and Bakker, S. 2017. Multi-User Motion Matching Interaction for Interactive Television using Smartwatches. In *Adjunct Proceedings of the ACM Interactive Experiences for Television and Online Video* (TVX '17). ACM, New York, NY, USA, (pp. 67-68).

Jeong, H., Saakes, D., Lee, U., Esteves, A., Velloso, E., Bulling, A., Masai, K., Sugiura, Y., Ogata, M., Kunze, K., Inami, M., Sugimoto, M., Rathnayake, A., and Dias, T. 2016. Demo hour. *interactions* 23, 1 (Jan. + Feb. '16), 8–11.

Clarke, C., Bellino, A., Gellersen, H., Esteves, A., and Velloso, E. 2016. TraceMatch: a Computer Vision Technique for User Input by Tracing of Animated Controls. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (UbiComp '16). ACM, New York, NY, USA, (pp. 298-303).

Velloso, E., Wirth, M., Weichel, C., Esteves, A. and Gellersen, H. 2016. AmbiGaze: Direct Control of Ambient Devices by Gaze. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems* (DIS '16). ACM, New York, NY, USA, (pp. 812-817).

Esteves, A., Velloso, E., Bulling, A., and Gellersen, H. 2015. Orbits: Gaze Interaction for Smart Watches using Smooth Pursuit Eye Movements. In *Proceedings of the 28th Annual ACM Symposium on User Interface Software and Technology* (UIST '15). ACM, New York, NY, USA, (pp. 457-466). [**Best Paper Award**] [**Computing Reviews: Notable Computing Books and Articles of 2015**]

Dionisio, M., Gujuran, A., Pinto, M., & Esteves, A. 2015. Fall of Humans: Interactive Tabletop Games and Transmedia Storytelling. In *Proceedings of the 2015 International Conference on Interactive Tabletops & Surfaces* (ITS '15). ACM, New York, NY, USA, (pp. 401-404).

Oakley, I., Lee, D., Islam, R., and Esteves, A. 2015. Beats: Tapping Gestures for Smart Watches. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (CHI '15). ACM, NY, USA, (pp. 1237-1246). Esteves, A., Bakker, S., Antle, A., May, A., Warren, J. and Oakley, I. 2015. The ATB Framework: Quantifying and

Classifying Epistemic Strategies in Tangible Problem-Solving Tasks. In *Proceedings of the 9th International Conference on Tangible, Embedded and Embodied Interaction* (TEI '15). ACM, New York, NY, USA, (pp. 13-20).

Esteves, A., Velloso, E., Bulling, A., and Gellersen, H. 2015. Orbits: Enabling Gaze Interaction in Smart Watches using Moving Targets. In the *Adjunct Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2015 ACM International Symposium on Wearable Computers* (UbiComp/ISWC'15 Adjunct). ACM, New York, NY, USA, (pp. 419-422).

Esteves, A., Bakker, S., Antle, A., May, A., Warren, J. and Oakley, I. 2014. Classifying Physical Strategies in Tangible Tasks: A Video-Coding Framework for Epistemic Actions. In *Extended Abstracts of the 32nd ACM Conference on Human Factors in Computing Systems* (CHI '14), ACM, (pp. 1843-1848).

Esteves, A., Quintal, F. and Oakley, I. 2014. TouchCloud: An Exploratory Study in Physically Tagging the Cloud. In *Extended Abstracts of the 8th International Conference on Tangible, Embedded and Embodied Interaction* (TEI '14). [**Winner of the Devpost Internet of Things Hackathon 2015**]

Esteves, A., Quintal, F. and Oakley, I. 2014. TouchCloud: Enabling People to Augment Real-world Objects with Cloud-stored Data. In *Proceedings of The HCI Society of Korea 한국HCI학회 학술대회* (HCI 2014), (pp. 777-779).

Esteves, A., Quintal, F. and Oakley, I. 2013. jamTable: Can Physical Interfaces Support the Collaboration between Novice and Experienced Musicians? In I. Oakley and S. Brewster (eds) *Haptic and Audio IxD*, 7989, (pp. 99-108).

Esteves, A., Hoven, E. van den and Oakley I. 2013. Physical Games or Digital Games? Comparing Support for Mental Projection in Tangible and Virtual Representations of a Problem Solving Task. In *Proceedings of the 7th International Conference on Tangible, Embedded and Embodied Interaction* (TEI '13). ACM, NY, USA, (pp. 167-174).

Esteves, A., Scott, M. and Oakley I. 2013. Supporting Offline Activities on Interactive Surfaces. In *Proceedings of the 7th International Conference on Tangible, Embedded and Embodied Interaction* (TEI '13). ACM, NY, USA, pp. 147-154.

Oakley, I. & Esteves, A. 2013. On and Offline Tangible Interaction: Studying the Secret Lives of Augmented Objects. In *IEEE International Symposium on Ubiquitous Virtual Reality* (ISUVR '13), (pp. 5-6).

Augusto Esteves. 2012. Designing tangible interaction for embodied facilitation. In *Proceedings of the 6th International Conference on Tangible, Embedded and Embodied Interaction* (TEI '12). ACM, NY, USA, (pp. 395-396).

Esteves, A. & Oakley I. 2011. Informing Design by Recording Tangible Interaction. In *Extended Abstracts of the of the 29th Annual ACM Conference on Human Factors in Computing Systems* (CHI '11), ACM, NY, USA, (pp. 2077-2082).

Esteves, A. & Oakley I. 2011. Design for interface consistency or embodied facilitation? In *Adjunct Proceedings of the 29th Annual ACM Conference on Human Factors in Computing Systems* (CHI '11), Workshop on Embodied Interaction: Theory and Practice in HCI, (pp. 37-40).

Esteves, A. & Oakley I. 2011. Eco Planner: A Tabletop System for Scheduling Sustainable Routines. In *Extended Abstracts of the 5th International Conference on Tangible, Embedded and Embodied Interaction* (TEI '11).

Esteves, A. & Oakley I. 2010. Mementos: A Tangible Interface Supporting Travel. In *Proceedings of the 6th Nordic Conference on Human-Computer interaction* (Nordichi '10). ACM, New York, NY, USA, (pp. 643-646).

PATENTS

2018 Consultant for InterDigital on three Invention Disclosures

2015 Oakley, I, Lee, D.Y., MD Rasel, I., and Esteves, A. Method for providing user interface according to beats touch based on mobile terminal, 10-1695940-0000, 2017.01.13, **Issued**, Korean Patent Office.

GRANTS

2024 HORIZON-CL2-2024-HERITAGE-01: Reframing European Gastronomy Legacy through Innovation, Sustainability, and Heritage (*international*), PI

2023 Ministry of National Defence (CINAMIL): Dismounted Soldier AR System (*national*), Co-I

2022 HORIZON-WIDERA-2021-ACCESS-03: Fostering Digital Civics Research & Innovation (*int.*), Co-I

2021 Pedagogic Innovation Projects (*internally funded*), Co-I

2020 H2020-WIDESPREAD-2018-2020-6: Blockchain Technologies for Social Good (*international*), Co-I

FCT RESEARCH 4 COVID-19 2nd Edition (*national*), Co-I

COST Action 19142: Leading Platform for European Citizens, Industries, Academia and Policymakers in Media Accessibility (*international*), Co-I

2019 Carnegie Research Incentive Grant (*national*), PI

Pedagogic Innovation Projects (*internally funded*), Co-I

2018 SICSA: Postdoctoral and Early Career Researcher Exchanges (*national*), PI

Edinburgh Napier University: Research Funding Competition (*internally funded*), PI

2017 H2020-LCE-02-2016: Secure, Clean and Efficient Energy (*international*), Co-I

Edinburgh Napier University: Research Funding Competition (*internally funded*), PI

2016 Carnegie Research Incentive Grant (*national*), PI

Santander Mobility Grant (*national*), PI

Edinburgh Napier University: Summer Internship Scheme (*internally funded*), PI

H2020-SMEINST-1-2015: SME Instrument Award (*international*), Co-I