

Vittoria Frau

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Citizenship: Italy

Research interests

I explore the transformative potential of End-User Development in including in the process of the creation of an Extended Reality (XR) artifact people without programming skills.

Education

University of Cagliari Cagliari, Italy
PhD in Mathematics and Computer Science 1 October 2020 – 27 March 2024
Mentor: Professor Lucio Davide Spano.

University of Cagliari Cagliari, Italy
MA in Mathematics and Computer Science 25 September 2017 – 28 February 2020
Mentors: Professor Lucio Davide Spano

University of Cagliari Cagliari, Italy
BA in Mathematics and Computer Science 19 September 2014 – 21 July 2017
Mentor: Professor Gianni Fenu

Research experience

Post-doc at University of Aarhus
Mentor: Professor German Leiva January 2024 – Present
Project: Construction of interactive Mixed Reality systems for Non programmers.

Visiting Researcher at Université Grenoble Alpes
Mentor: Professor Laurence Nigay 1 October 2020 – 27 March 2024
Scholarship: Received *PLACEDOC* scholarship
Grenoble, France

Visiting Researcher at University of Michigan
Mentor: Professor Michael Nebeling 01 June 2022 – 31 August 2022
Scholarship: Received *GLOBUSDOC* scholarship.
Michigan, USA

Scholarship Researcher at the University of Cagliari
Mentor: Professor Lucio Davide Spano 2019 – 2020
Project: Research and support for the implementation of an authoring environment for rapid point-and-click adventure games development, for the development of a video game on Sulcis-Iglesiente Geopark

Scholarship Researcher at University of Cagliari

Mentor: Professor Lucio Davide Spano

2018 – 2019

Project: MR²: Hologens Mixed Reality interface for Medical Records navigation

Teaching experience

Co-Teaching, Department of Digital Design and Information Studies (University of Aarhus)

February 2024 – Present

EID: Experimental Interaction Design

Provide comprehensive support to students in exploring and applying emerging interaction technologies and experimental methods in Interaction Design. Mentor students in prototyping, assessing, and experimenting with technologies such as virtual and augmented reality.

Tutoring, Department of Mathematics and Computer Science (University of Cagliari)

From 2018 to

2023

IUM: Interazione Uomo Macchina (Human-Computer Interaction)

Provide information, assistance, and support to students to improve learning conditions and ensure educational quality. Tutoring classes were organized in the regarding of the Android Studio framework and topics related to course content.

Teaching, the Net Value Srl

From 2020 to 2023

Teacher of Object Oriented Programming languages, Structured Programming, Human Computer Interaction, Android Development, Web Languages and Angular Framework.

Tutoring, Master PIE (University of Cagliari)

June 2021 – October 2021

Programming

Tutoring activities for students during the Master's program, providing instrumental and subsidiary support compared to the teaching staff involved in the course of studies

Publications

Poster: Programming Rules by Demonstration in Virtual Reality

Bellini et al.

Proceedings of the 15th Biannual Conference of the Italian SIGCHI Chapter, 1-3.

DOI: [10.1145/3605390.3610819](https://doi.org/10.1145/3605390.3610819)

XRSpotlight: Example-based Programming of XR Interactions using a Rule-based Approach

Frau et al.

Proc. ACM Hum.-Comput. Interact. 7, EICS, Article 185 (June 2023), 28 pages.

DOI: [10.1145/3593237](https://doi.org/10.1145/3593237)

How End Users Develop Point-and-Click Games

Artizzu et al.

IS-EUD 2023. Lecture Notes in Computer Science, vol 13917, Springer, Cham.

DOI: [10.1007/978-3-031-34433-6_14](https://doi.org/10.1007/978-3-031-34433-6_14)

AR TutorialKit: an Augmented Reality Toolkit to Create Tutorials

Meloni, Perniciano, Cerniglia, Frau, Spano

CEUR WORKSHOP PROCEEDINGS 2023

Article Link: <https://iris.unica.it/handle/11584/382530>

Creating Adaptive and Interactive Stories in Mixed Reality

Frau et al.

Smart Tools and Applications in Graphics - Eurographics Italian Chapter Conference, 2022.

DOI: [10.2312/stag.20221261](https://doi.org/10.2312/stag.20221261)

Defining Configurable Virtual Reality Templates for End Users

Artizzu et al.

Proc. ACM Hum.-Comput. Interact. 6, EICS, Article 163 (June 2022), 35 pages.

DOI: [10.1145/3534517](https://doi.org/10.1145/3534517)

Supporting End User Development in Extended Reality through Natural Language Rules

Frau, Vittoria.

International Symposium on End User Development, Springer, Cham, 2021.

DOI: [10.1007/978-3-030-79840-6_17](https://doi.org/10.1007/978-3-030-79840-6_17)

PAC-Bot: Writing Text Messages for Developing Point-and-Click Games

Asunis, Luca, et al.

International Symposium on End User Development, Springer, Cham, 2021.

DOI: [10.1007/978-3-030-79840-6_15](https://doi.org/10.1007/978-3-030-79840-6_15)

First-person Cinematographic Videogames: Game Model, Authoring Environment, and Potential for Creating Affection for Places

Blečić et al.

Journal on Computing and Cultural Heritage Volume 14, Issue 2, May 2021.

DOI: [10.1145/3446977](https://doi.org/10.1145/3446977)

Browsing Medical Records in Mixed Reality with MR²

Frau, Cuccu, Spano.

WomENCourage'19, 2019, Rome, Italy.

Article Link: <https://womencourage.acm.org/2019/>

MR²: a mixed reality interface for navigating medical records

Frau, Cuccu, Spano.

PerDis '19 Proceedings of the 8th ACM International Symposium on Pervasive Displays, June 2019.

DOI: [10.1145/3321335.3329684](https://doi.org/10.1145/3321335.3329684)

Awards

Best Paper

June 2023

The paper XRSpotlight: Example-based Programming of XR Interactions using a Rule-based Approach received the best paper award at the EICS 2023 conference.

Honorable Mention Poster

September 2023

The poster Programming Rules by Demonstration in Virtual Reality received the honorable mention award at the CHIItaly 2023 conference.

Mentoring Students

Julie Fey

2024

Master student at Aarhus University

Project: An XR prototyping tool that supports multimodal interactions with a unified overview of the interaction descriptions.

Gador Mostallino

2023

Bachelor student at University of Cagliari

Project: Development of an adaptive and interactive storytelling application using MRTK for Mixed Reality

Davide Cocco and Emanuele Caddeo

2023

Bachelor students at University of Cagliari

Project: Development of a VR interface for creating professional training procedures directly within the VR device.

Sebastiano Felice Mereu

2022

Bachelor student at University of Cagliari

The project involved an in-depth study of virtual reality interactions using two specific MRTK example scenes to identify and analyze interactions using Roslyn, a code analysis tool.

Asunis Matteo

2021

Bachelor student at University of Cagliari

Project: Development of a Unity plugin that allows end users to manipulate an XR experience using event-condition-action rules defined in natural language. Also, the creation of a case study to refine the project in Unity, including scenario creation, persona development, and review of existing materials

Industry experience

Tecnit S.p.A.,

Elmas, Sardinia

Intern January 2017 – May 2017
Collaborated on the PortalUnica project (a portal for Cagliari University) using the Entando Software Platform for contents porting.

Miscellaneous

Course on Protecting Human Research Participants March 2024
I successfully completed the web-based course "Protecting Human Research Participants Online Training."

Post-CHI Summer School On Extended Reality (XR) May 2023
Participation at the Summer School about XR held in Copenhagen. It was an occasion to collaborate with international XR researchers, contributing ideas in a poster and demo session, and participating in a symposium dinner to enhance understanding of XR's future applications.

Extended Reality for Everybody Specialization, Coursera January 2022
- Intro to AR/VR/MR/XR: Technologies, Applications & Issues
- User Experience & Interaction Design for AR/VR/MR/XR
- Developing AR/VR/MR/XR Apps with WebXR, Unity & Unreal

Collaboration with IDEAS project October 2020 – June 2021
Novel building Integration Designs for increased Efficiencies in Advanced Climatically Tunable Renewable Energy Systems. Modelling of a toolkit to accompany users in choosing the best configuration.

Urbagram Project development September 2020 – September 2020
Collaboration with University of Cagliari, developing a web application for the architecture festival of Cagliari. The interface includes a quiz game and an interactive canvas for creating and sharing Instagram-style stories.

Skills

Programming

Proficient in: *Matlab, C, C++, C#, Java, Python, Scala, Typescript, Javascript*
Familiar with: *Ocaml, Spark*

Client ad Server side

HTML, CSS, JavaScript, Node.js
Apache, SQL, XML, Bash

Languages

Italian (native speaker), English (fluent) Upper Intermediate language certificate by CLA (Centro Linguistico Ateneo) on 16/05/2019.

Other interests

Music, history, movies, videogames, technology, sport and reading.