

**Ph.D. in Information Technology
Thesis Defense**

**September 5th, 2023
at 13:00**

Sala Seminari Nicola Schiavoni

Francesco VONA – XXXIV Cycle

**ACCESSIBLE INTERACTION DESIGN PATTERNS FOR VIRTUAL AND AUGMENTED
REALITY**

Supervisor: Prof.ssa Franca Garzotto

Abstract:

Virtual and Augmented Reality (XR for short) have achieved an increasingly widespread interest in recent years and are acknowledged to hold enormous potential in many domains.

Still, the field faces significant challenges in application design and development due to the increased richness of interaction opportunities offered by emerging XR technologies and the lack of design standards and shared guidelines. A number of principles have been formulated in the current state of the art, but their systematization into a well-structured conceptual framework is missing.

This Ph.D. research addresses this issue by proposing a Pattern Language for XR applications.

A Pattern Language is an organized set of interrelated Design Patterns. A Design Pattern is a general reusable solution to a common design problem. It describes a specific design problem in a particular design context and a solution scheme.

Our Pattern Language includes 20 patterns that focus on User Experience (UX) design and considers accessibility - particularly for persons with neurodevelopmental disorders - as a fundamental design need. Therefore each design pattern includes, in its solution component, a subsection that highlights explicitly how to address the above requirement. The proposed patterns not only distill the personal experience gained in the design, development, and evaluation of various (eight) XR applications for persons with cognitive impairments (widely described in the thesis) but also conceptualize the results of an extensive systematic review of the current literature in the field.

PhD Committee

Prof. Marco Gribaudo, Politecnico di Milano

Prof. Luigi De Russis, Politecnico di Torino

Prof. Fabio Buttussi, Università di Udine