

10C: Building social connections in virtual worlds

User Experience Design, Software Engineering

virtual reality user centered design social dynamics immersive interaction accessibility

Mentor

CSIRO

Problem Space/Domain

Improving the experience of online events is of critical importance. Whether due to pandemics, geopolitical influences, financial or accessibility factors, there is an increasing need for virtual events to provide an alternative to in-person events. While attention has been given to technological access issues (e.g., the digital divide; Huang et al., 2023) and susceptibility to cybersickness (e.g., nausea; Saredakis et al., 2020) as obstacles to attending virtual events, an underexplored barrier is the design of the virtual spaces themselves. As seen in physical spaces, design choices can enable (Parsons, 2018) or discourage (e.g., open-plan office space; Bernstein & Turban, 2018) interactions between people. Thus, a critical question remains regarding how to best design virtual spaces to promote meaningful, comfortable and engaging interactions between people.

Project Brief

In this project, students will explore design choices in virtual spaces and assess how these impact social dynamics. Specifically, what factors encourage users to form meaningful experiences and connections that are often perceived to occur in physical spaces. These factors are likely to be multifaceted and could represent properties around:

- Virtual architecture: e.g., features of a space, height of the ceilings, scale of objects in the world
- Interaction opportunities: e.g., proximity-dependent chat, shared activities

- Virtual space context: e.g., realism vs. novelty of the space, gamified vs. non-gamified experience

After potential factors have been identified, assessing socialisation behaviours is a key challenge. Here, objective measures such as time spent in spaces, position in space; and subjective measures such as perceived enjoyment, quality of experience.

Success Criteria

1. Identification of Social Design Factors

The project identifies and clearly articulates a set of design elements that influence social connection in virtual environments, based on literature and/or original user exploration.

2. Implementation of Multi-User Social Experience

A functioning prototype supports multiple users simultaneously and enables naturalistic social interaction, allowing exploration of the identified factors through real-time engagement.

3. Evidence of Impact on Social Behaviour

The team demonstrates through qualitative and/or quantitative methods how different virtual space designs influence user socialisation, comfort, and engagement.

4. Configurable and Testable Environment

The solution allows flexible configuration of key environmental variables, enabling further testing and comparison of social dynamics in different layouts or conditions.

Technologies, Techniques to Consider

- Virtual reality/augmented reality/mixed reality
- Experience sampling
- Surveys, questionnaires, interviews
- 3D modelling

Recommended Skills/Knowledge to have or develop

- Human-centered design
- UI/UX
- Interactive coding/tooling
- 3D asset creation/optimisation
- Game engine workflow

Related References / Documents / Materials

- ["Forging a path to a better normal for conferences and collaboration" - Moss et al. 2021](#)
- ["Around the hybrid conference world in the COVID-19 era" - Moss et al. 2022](#)
- ["The perceived impacts of COVID-19 on users' acceptance of virtual reality hardware: a digital divide perspective" - Huang et al. 2023](#)
- ["Factors associated with virtual reality sickness in head-mounted displays: a systematic review and meta-analysis" - Saredakis et al. 2020](#)
- ["Learning the ropes: The influence of the roundtable classroom design on socialization" - Parsons 2018](#)
- ["The impact of the 'open'workspace on human collaboration" - Bernstein & Turban 2018](#)

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