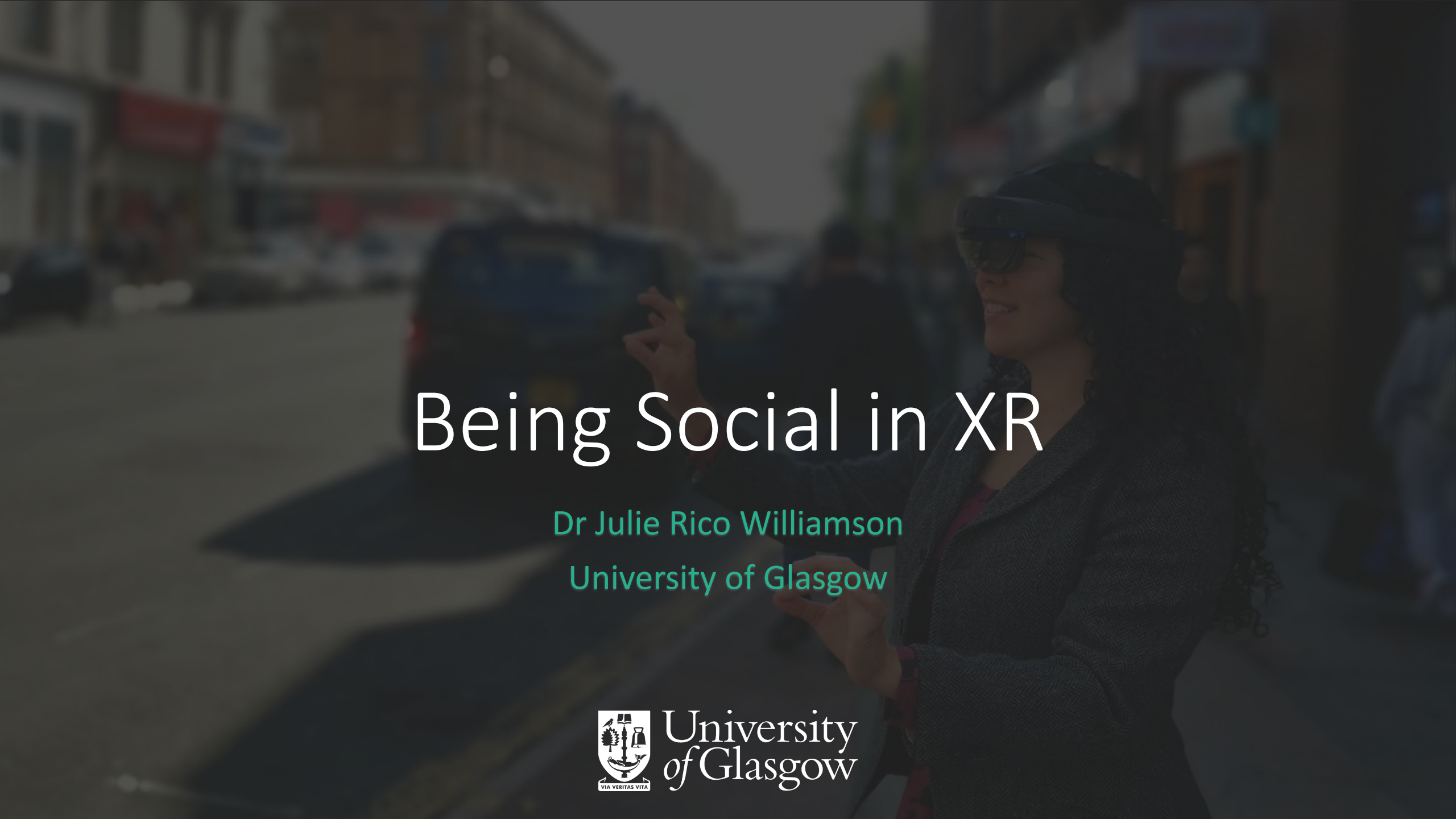
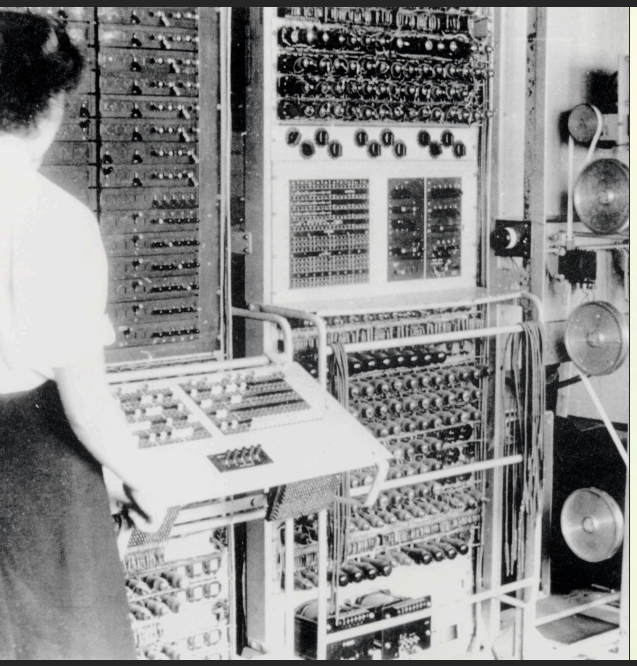


Being Social in XR

Dr Julie Rico Williamson

University of Glasgow

University of Glasgow



Programmable Computers
Humans command machines

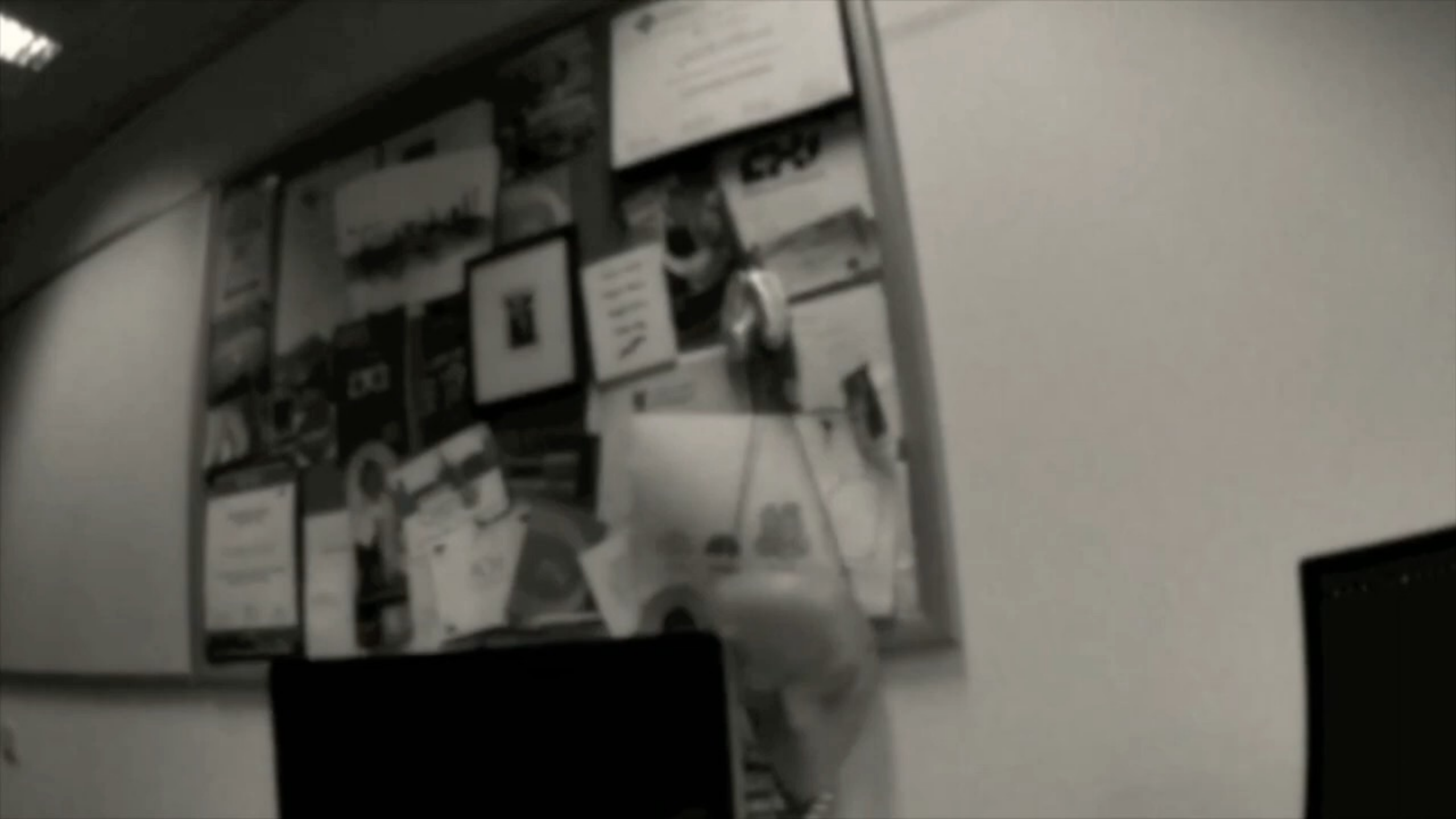
Personal Computers
I command machines

Mobile Computers
Computers exist within my world

Immersive Computers
Computers change how I experience my world

The Evolution of Computing

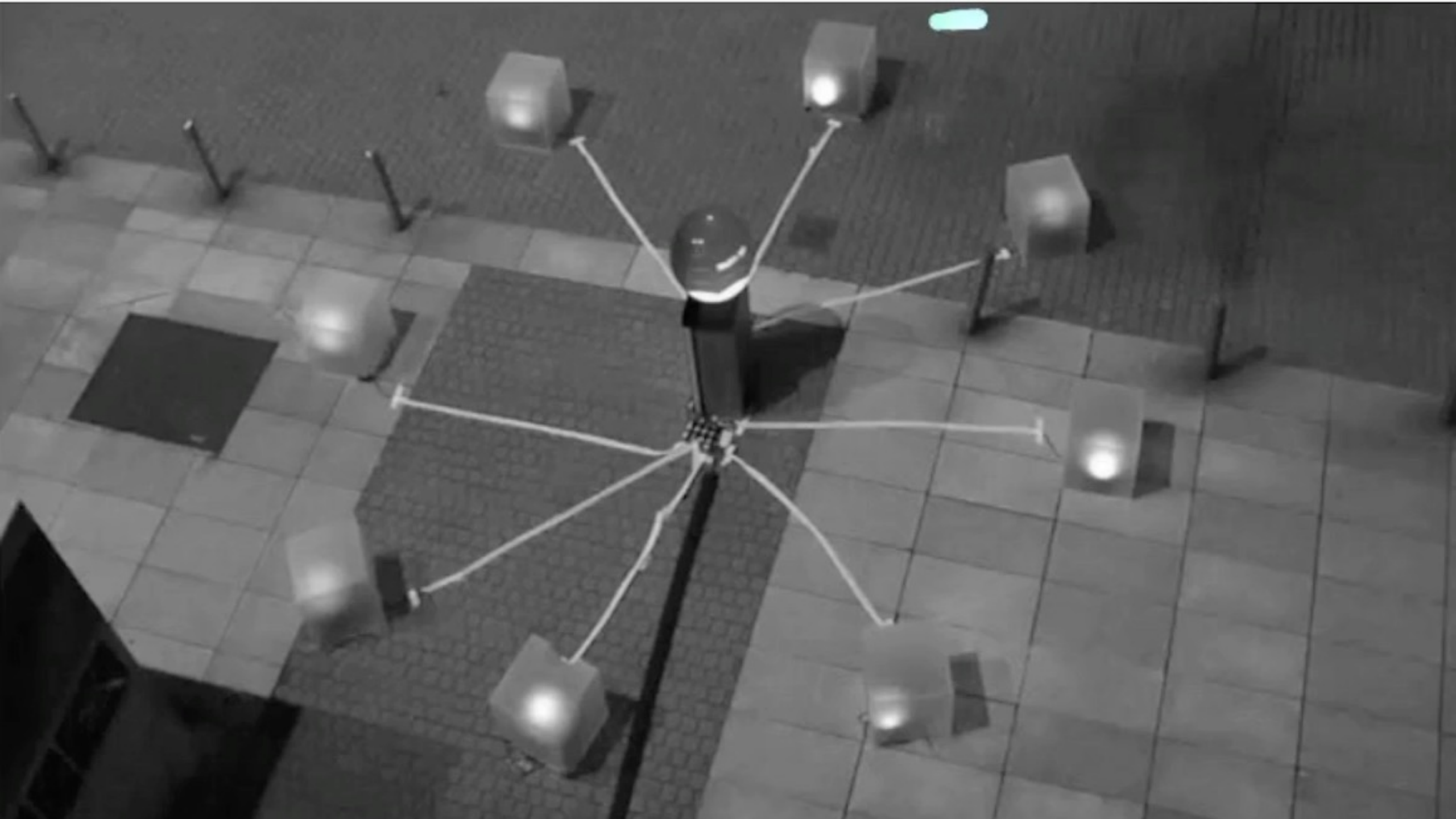
I believe we are moving towards a possible future where virtual content is indistinguishable in every way from physical content.

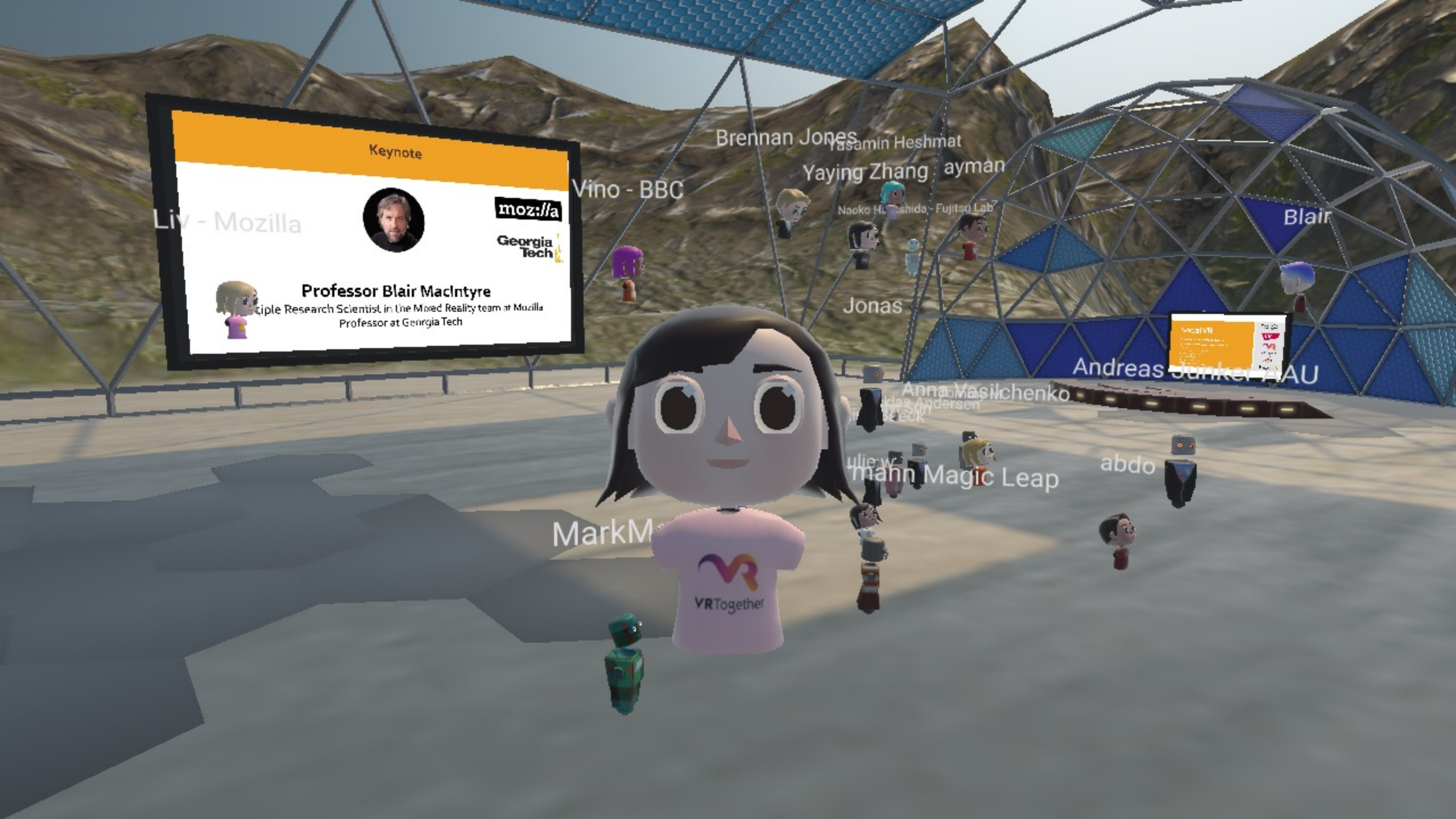


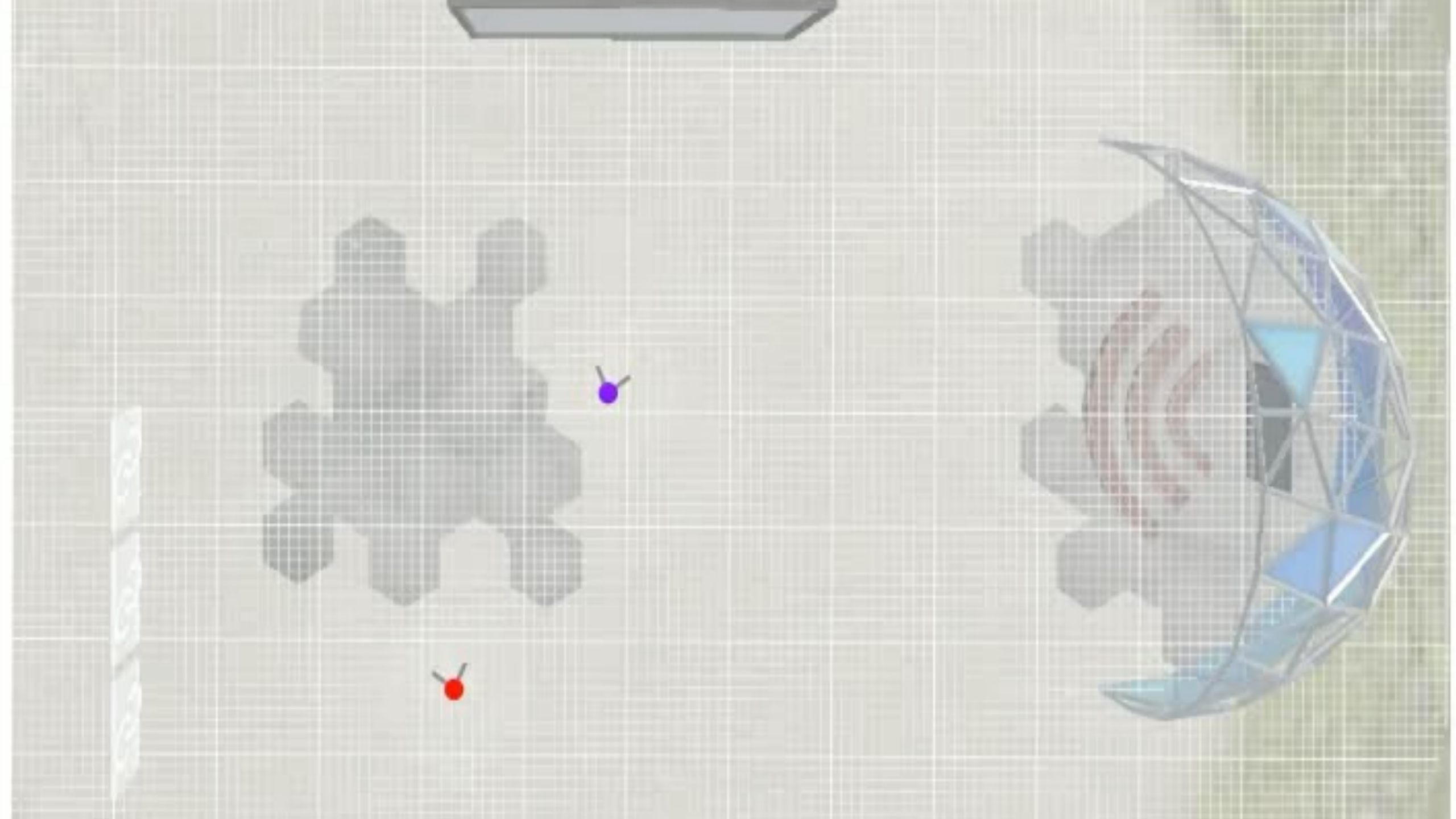
If we don’t make interpersonal interaction in XR work, these technologies could fragment and divide our experiences.

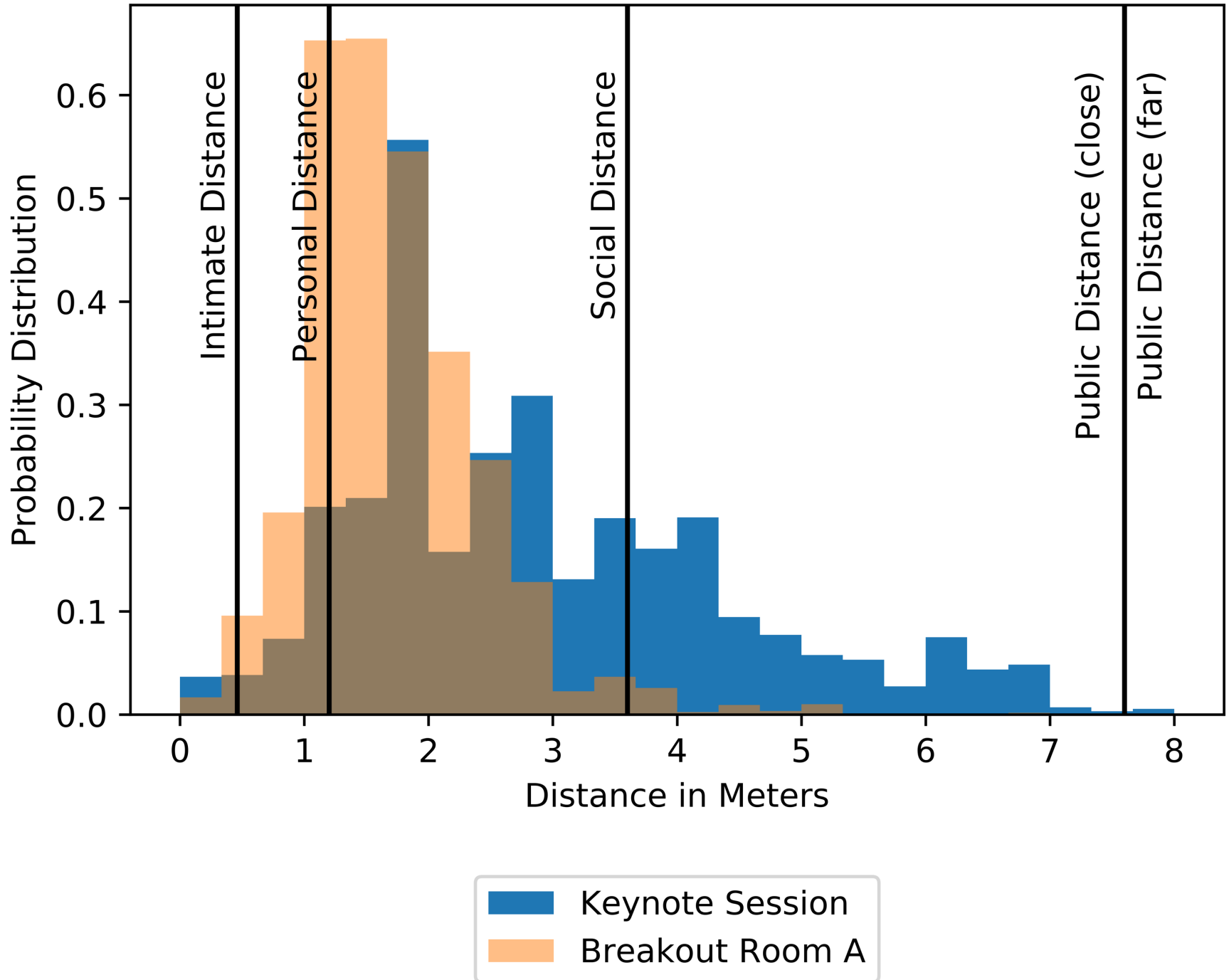
Frank
Steinicke
CHI 2019
Ceenu
George
CHI 2019

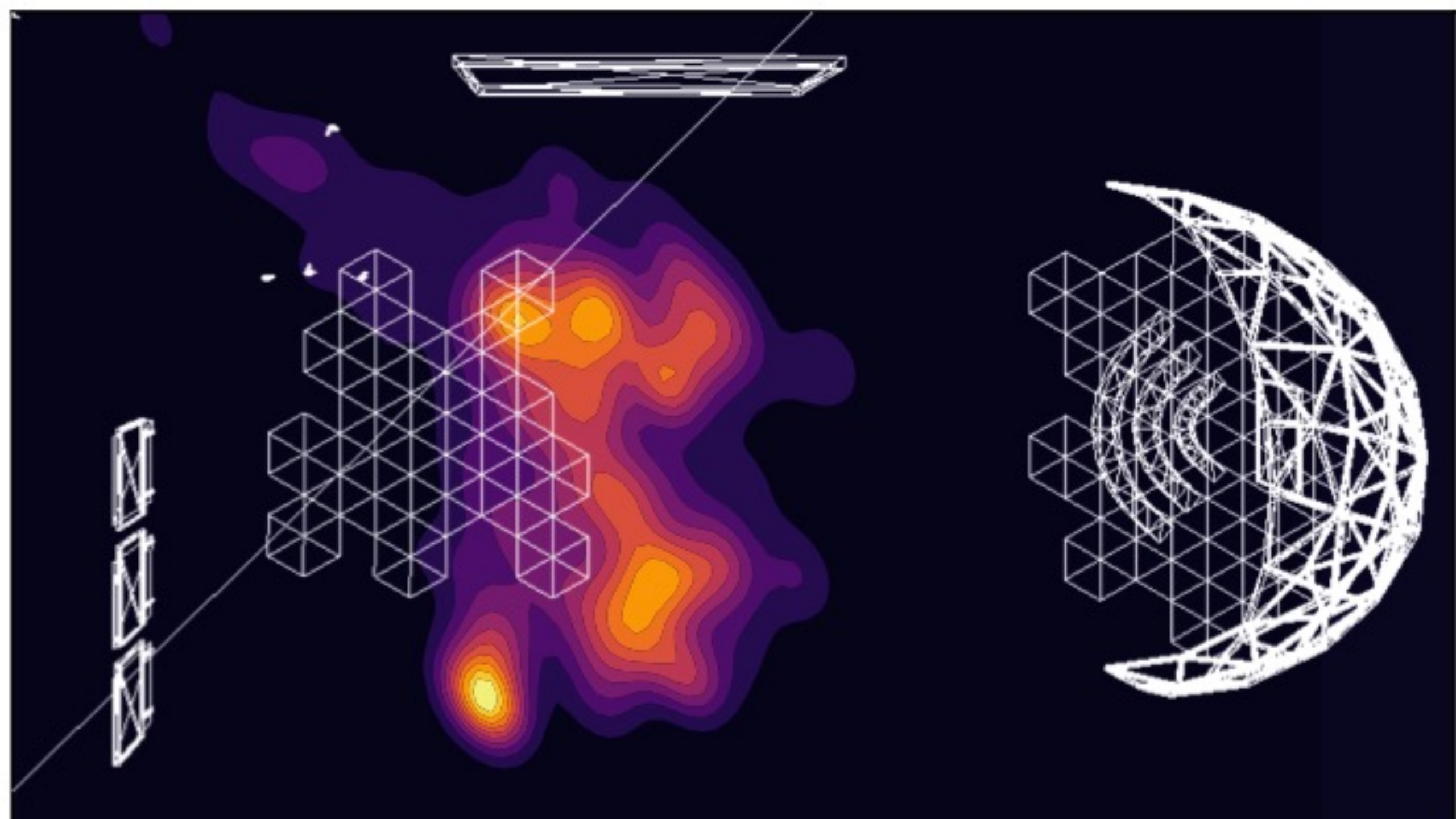
Observable behaviours give us insights into how interpersonal interaction is unfolding.

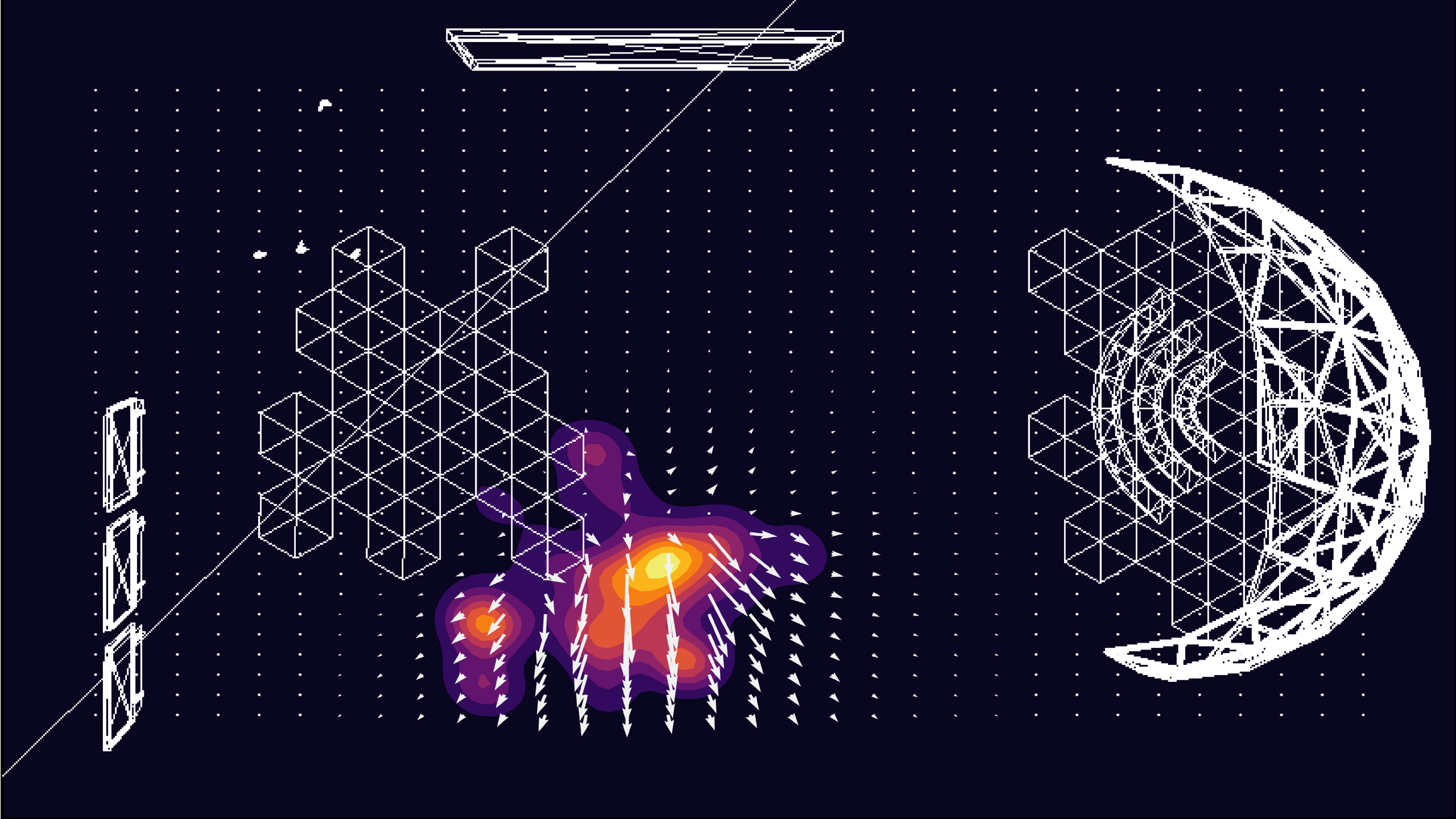



Keynote
moz://a
Georgia Tech
Professor Blair MacIntyre
Professor at Georgia Tech
Liv - Mozilla
Vino - BBC
Brennan Jones
Yasamin Heshmat
Yaying Zhang
ayman
Jonas
Blair
Andreas Junker - AAU
Anna Vasilchenko
abdo
VRTogether



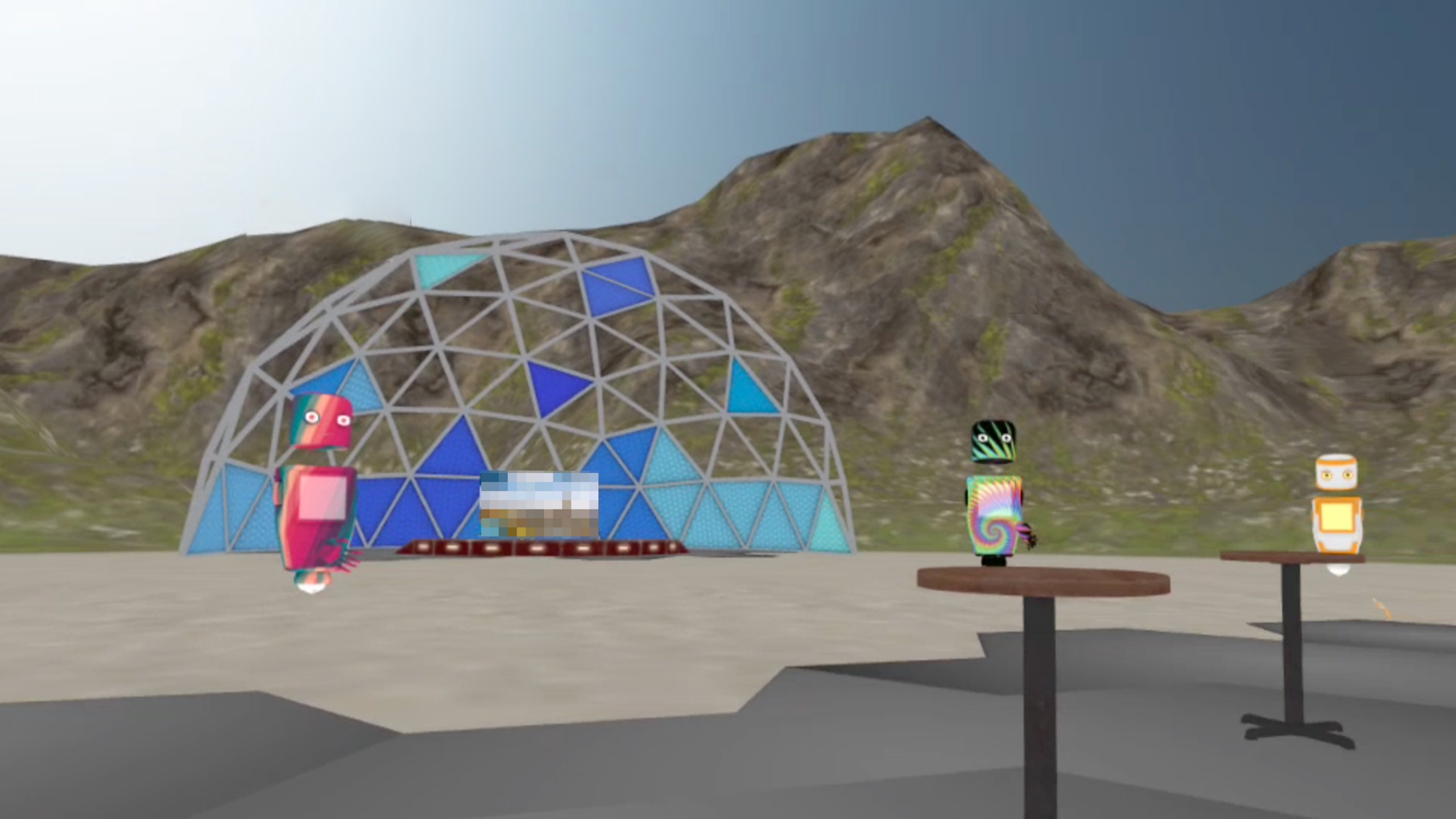

Probability Distribution
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Intimate Distance
Personal Distance
Social Distance
Public Distance (close)
Public Distance (far)
0
1
2
3
4
5
6
7
8
Distance in Meters
Keynote Session
Breakout Room A





Key Takeaways

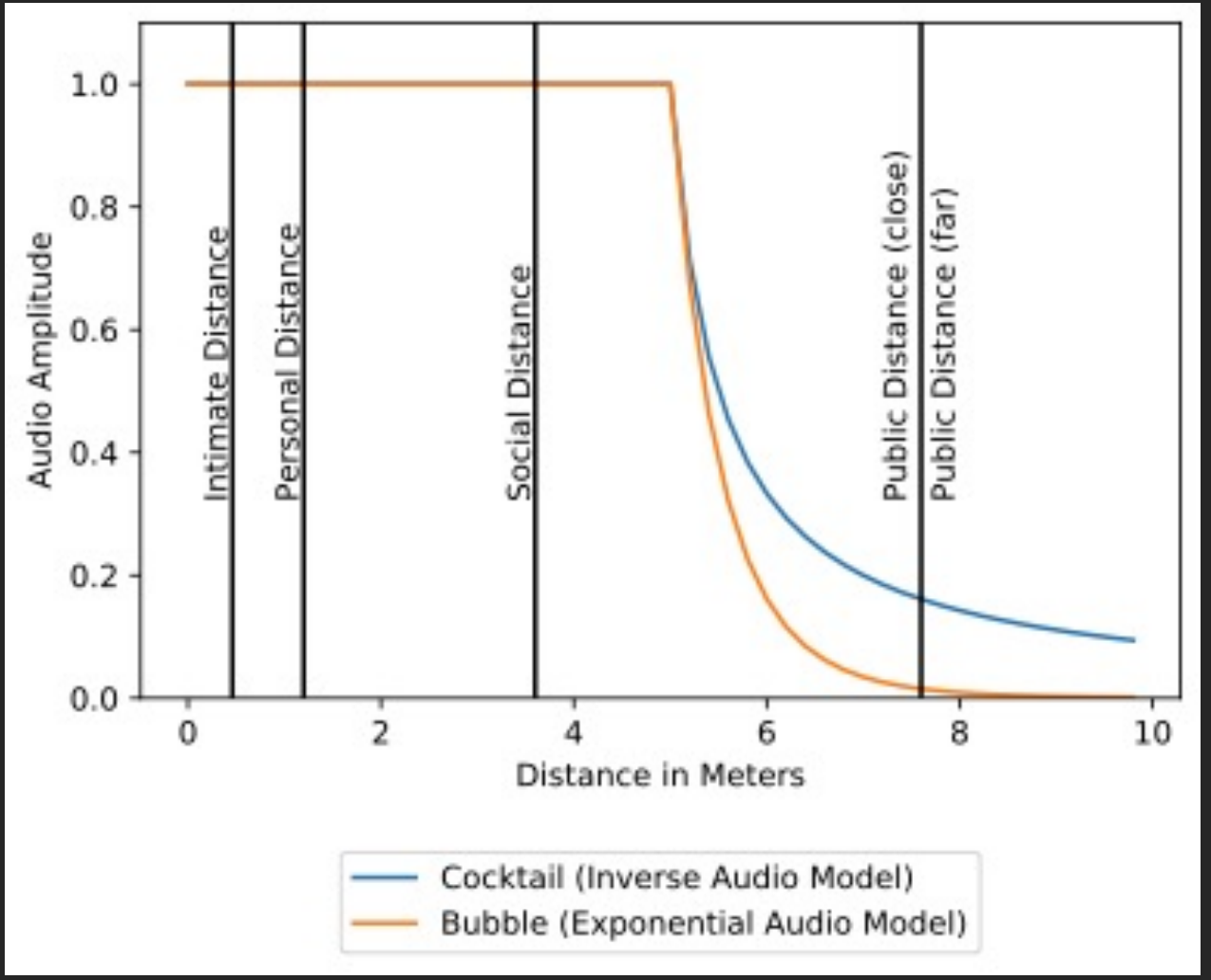
- Proxemic interactions are congruent with those in physical environments, although VEs are not constrained by physics
- Instrumented approach can provide insights into the effect of the environment textures, shapes, and design.
- Quantitative data can answer questions on social behaviours, such as group formation, social translucence, and social cues



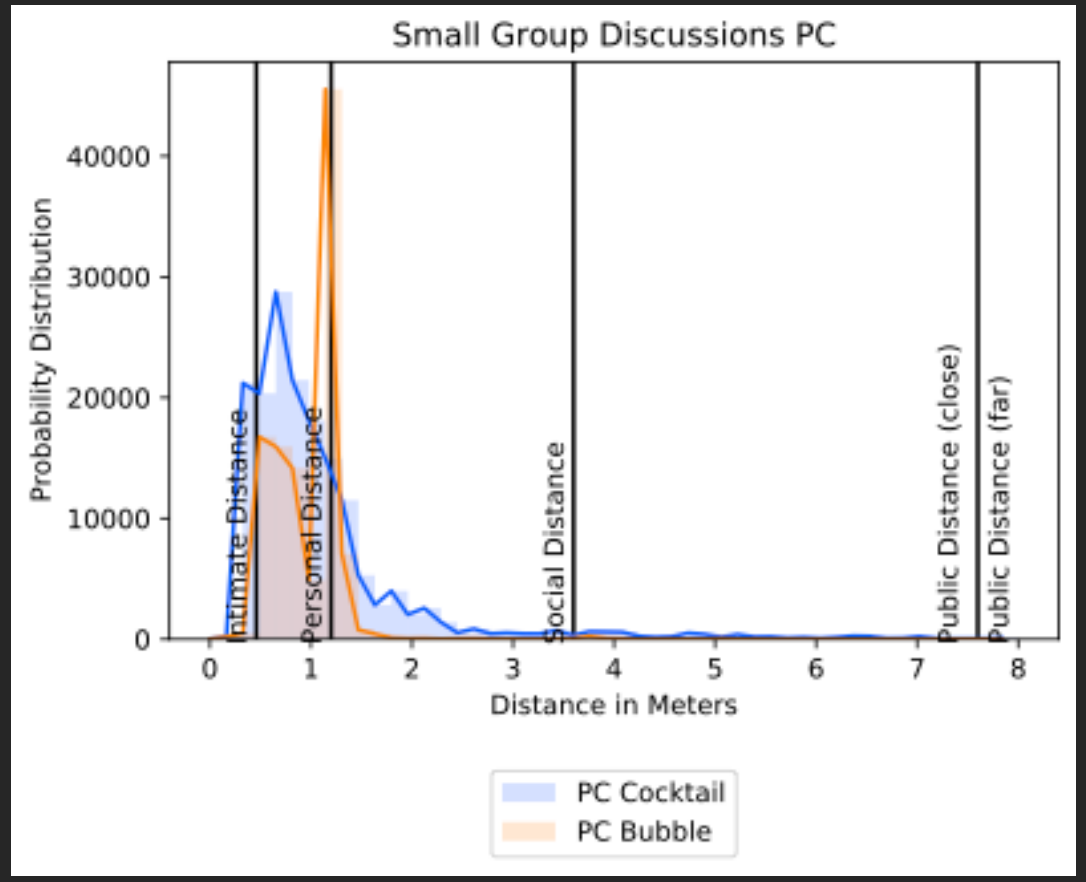
Digital proxemics describe how we use space in virtual environments (VEs) and how the presence of others influences our behaviours, interactions, and movements.

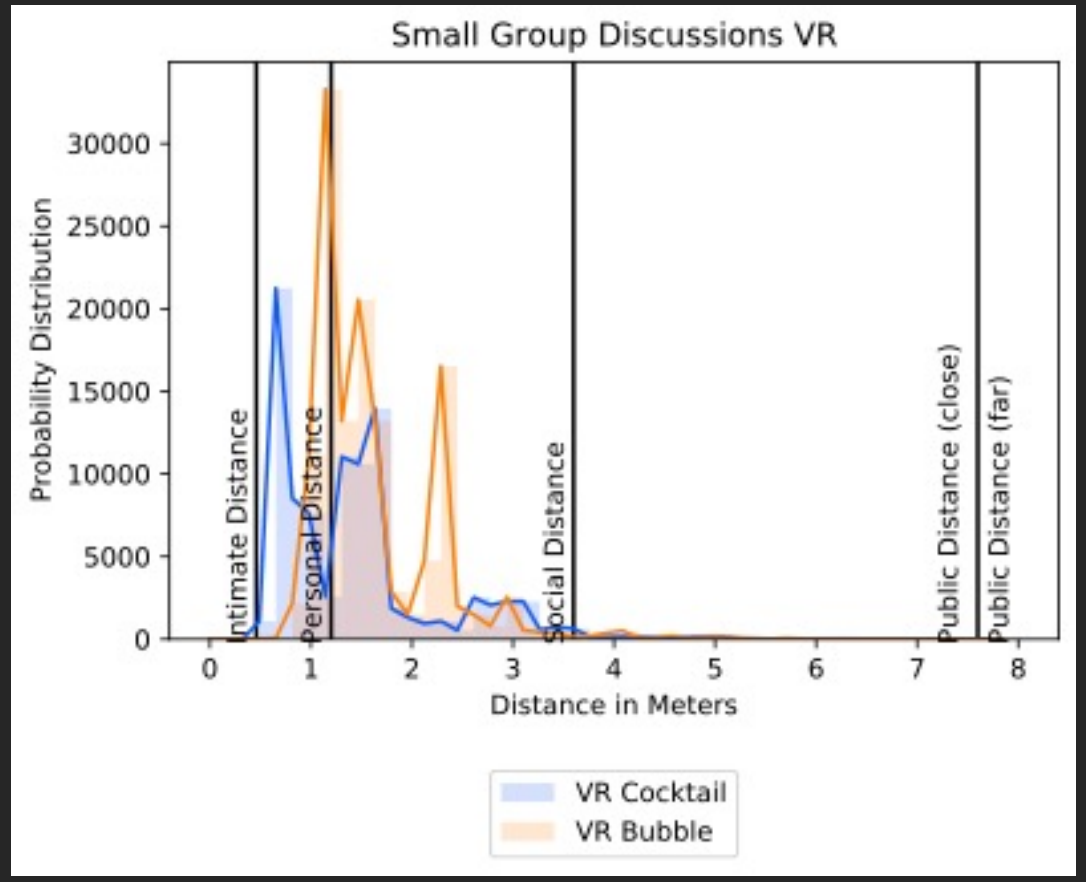
Evaluation

- VR versus Desktop Display
- Inverse versus Exponential Audio

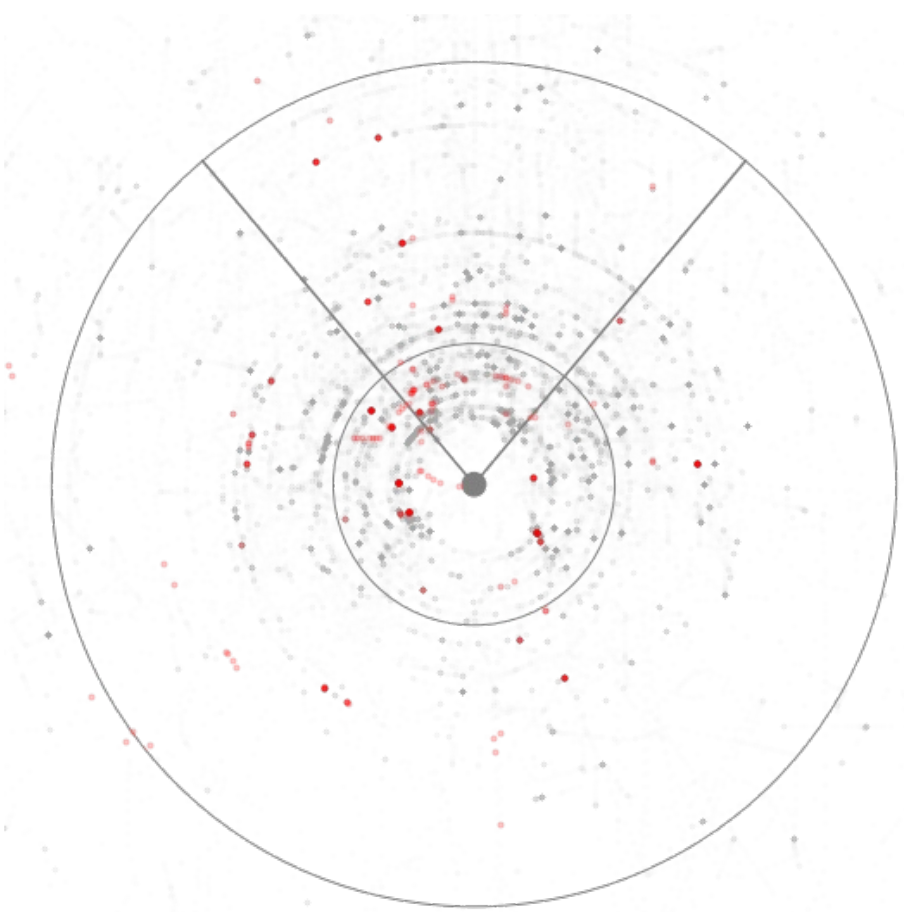


Small Group and Large Group

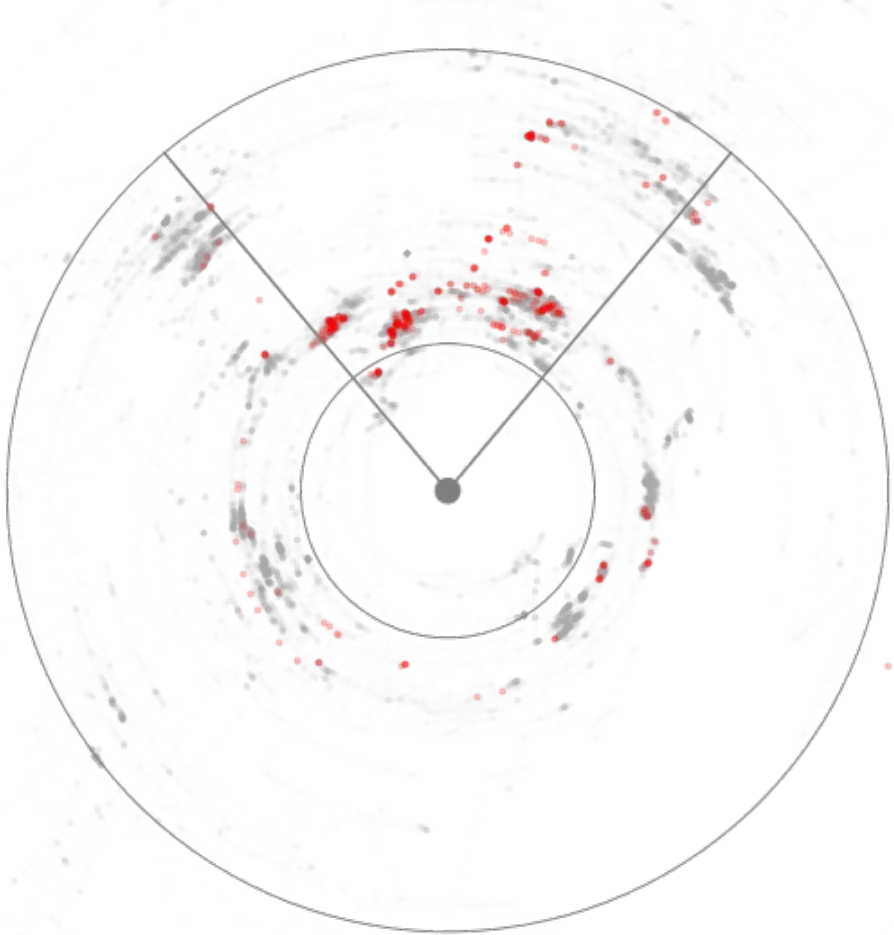




Performing Attention



Desktop PC



HMD

Key Takeaways

Designing effective experiences for virtual environments requires an intricate knowledge of how people make use of and behave in virtual spaces

Although this research only scratches the surface of the broader challenges, we hope this inspires future research into digital proxemics and improves how we collaborate and socialise in virtual environments in the future

All of the code, data, and notebooks used in this research are available open source in the ACM DL

jupyter 3.VisualisingSocialMetrics Last Checkpoint: 01/12/2021 (autosaved)

Logout

File Edit View Insert Cell Kernel Widgets Help

Trusted | Python 3

Run Markdown

Visualising Social Metrics

This notebook generates all the proxemic figures used in our paper on *Proxemics and Social Interactions in an Instrumented Virtual Reality Workshop*.

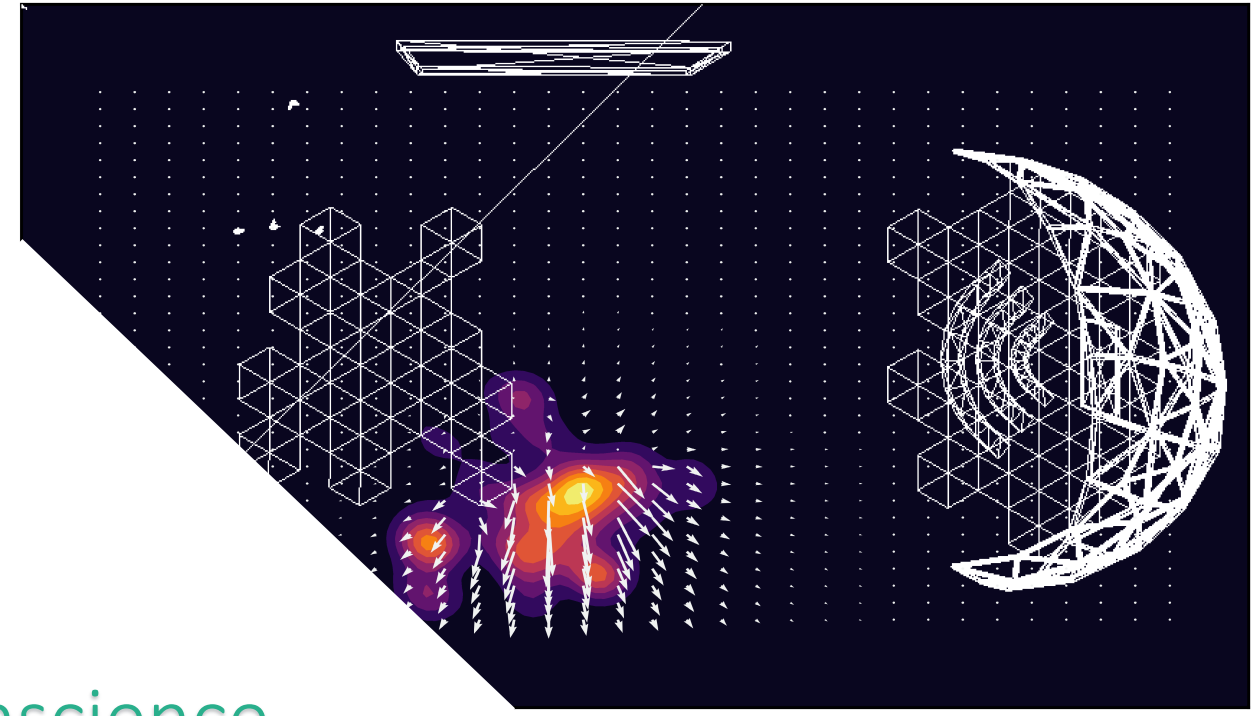
Using this Notebook, Code, or Data

This notebook and all of the resources included here are released on a Mozilla Public License 2.0. The data is released under CC-BY-NC-SA 4.0. To cite the paper, the bespoke logging client, the dataset, or this notebook please see the README.md or the DOI in the ACM Digital Library.

Requirements

In [2]:
```
import pickle
import pandas as pd
import numpy as np
import scipy
from scipy import  spatial
from PIL import Image
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
# %matplotlib notebook
```

Load our past pickles and csv data.



#openscience

main hubs-research-acm-chi-2021 / 2.Data / user_events_summary.csv

julierthanjulie Added user events summary CSV

1 contributor

27 lines (27 sloc) | 1.36 KB Raw

Search this file...

	uuid	os	vr_enabled
1	e66510f1-5be6-49d3-b453-d6c4c06fd90c	Mac OS	FALSE
2	0839c9e4-d4cf-43c9-8775-7908da1c5ae0	Mac OS	FALSE
3	4aca0773-07ac-4c86-a4be-32388cc1f34e	Windows 10	FALSE
4	12a9924c-fbc4-4267-a26e-7c65af061f01	Mac OS	FALSE
5	1b0832bb-1321-43b5-9249-45431a9629ef	Mac OS	FALSE
6	cbe424cb-d75d-4344-bc62-dcde3302936c	Mac OS	FALSE
7	24c51b19-9002-4ece-887f-d0963d87393b	Windows 10	TRUE
8	9faca14a-5ed7-4193-929f-261f67f91e52	Mac OS	FALSE
9	588b368f-628d-4126-b085-36a015979f1e	Windows 10	FALSE
10	18749939-ba76-4da4-9e5f-891d9b1ba879	Windows 10	FALSE
11	4c94bc4d-f1d1-47f2-bfa3-7c80ecd04636	Mac OS	FALSE
12	0c9dcd87-9027-40a1-b5d9-7af7e42275a9	Windows 10	FALSE
13	6c58c049-ec19-4adc-947e-eaa759c16577	Mac OS	FALSE

Unwatch 2 Star 5 Fork 0

Projects Wiki Security Insights

Go to file Add file Code

5a1eadd on 15 Jan 39 commits

	Adding PDF of Medium Post for archiving.	2 months ago
	Updating seaborn call. Adding some data docs.	2 months ago
	README.md update.	2 months ago
	First Push.	2 months ago
	Initial commit	2 months ago
.ADME.md	Update README.md	2 months ago

README.md

hubs-research-acm-chi-2021

Supplimental code and dataset for the ACM CHI 2021 paper on "Proxemics and Social Interactions in an Instrumented Virtual Reality Workshop". In this research paper we instrumented Mozilla Hubs Cloud to record where participants where during the event. From there, we measured proxemic and plotted the activity along with some semi-structured interviews.

About

Supplemental code and dataset for the ACM CHI 2021 paper on "Proxemics and Social Interactions in an Instrumented Virtual Reality Workshop".

doi.org/10.1145/3411764.3445729

social vr virtualreality academic mozilla dataset social-network-analysis hubs

Readme

MPL-2.0 License

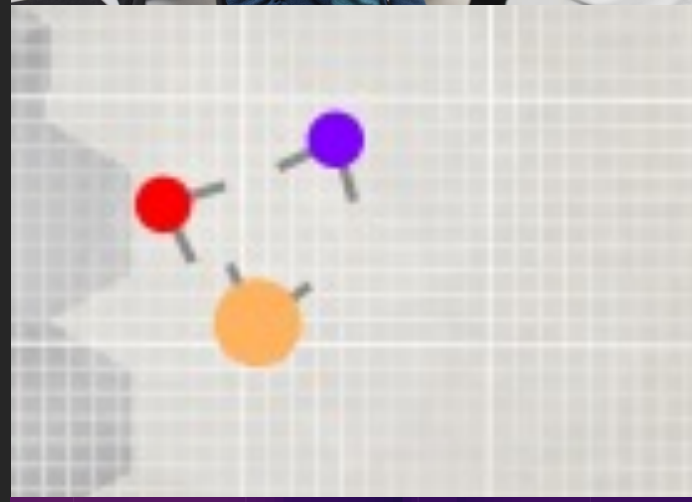
Releases 1

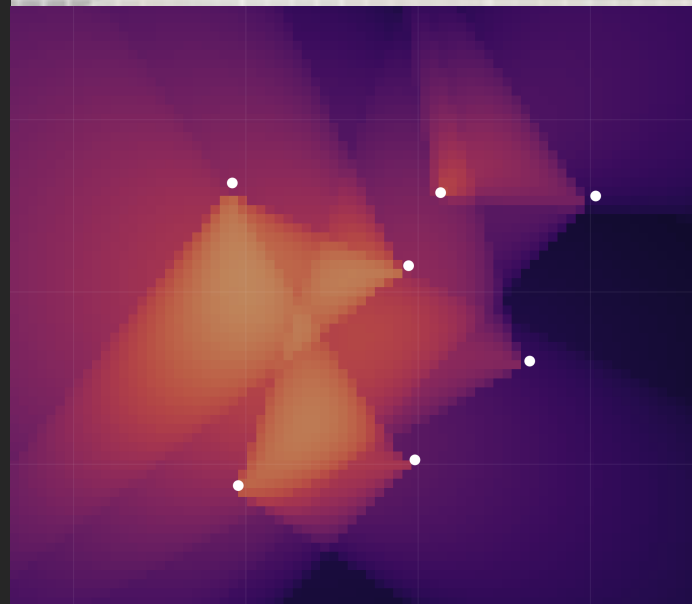
ACM DL Bundle Latest
on 12 Jan

Packages

Open Challenges in Social XR

- Models of XR that capture human experience across the XR continuum
- Design to stabilize interpersonal interaction
- Improve the quality of interpersonal interaction in XR





Open Science isn’t Just About Data

- My funding proposals from past applications (with some commentary) are available

What does it mean to stabilize interaction across the XR continuum?

Thank You

Dr Julie Rico Williamson

University of Glasgow