**Introduction:**

**Goal:** Explore the sense of participant presence while watching a live performance in an immersive world.

**Farewell to Dawn** is a project worked on in the past that captures the motion of two performers using 4 Kinects and sends the data in realtime to a digital scene within Unity.

In this project we extend their work by enabling the use of Mixed Reality (MR) devices such as the Hololens and Virtual Reality (VR) devices such as the Oculus where the performers and audience members share the same virtual space giving them an immersive experience.

**System Architecture:**

- MoCap
- Lighting
- Server
- Screen
- MR
- VR

**Features:**

**The Different Views**

- **MR**
- **Server**
- **VR**

**Client Anonymity:** Single server IP build deployment enables anonymity of client IP.

**UDP to Datagram API:** Redesigned API for Hololens functionality.

**Preprocessor definitions:** Creating platform specific builds.

**Shared space:** All members within MR or VR can see each other in the shared digital space.

**Dynamic body type:** Stick figures within the dancers view and particle system for an artistic touch within audience view.

**Light sync controller:** Light controlled dynamically is set on all clients in realtime.

**References:**

- Felipe Victorino Caputo, Joe Geigel. 2016. Creating an Actor’s Perspective of a Virtual Performance
- Martijn J. Schuemie, Charles A.P.G. van der Mast. Presence: Interacting in VR?

**Conclusion:**

Current networking architecture allows us to easily add additional devices.

**Single server IP** over multiple client IP improves code scalability.

Introduced support for Hololens, Oculus and regular viewing.

**In future,** it would be beneficial to perform a qualitative and quantitative human interactions study to understand the benefits of shared experience.

**Two Artist Performance Setup:**

- 4 Kinects
- 2 Hololens
- 5 Oculus
- 1 Server PC
- 4 Motion tracking PC’s
- 5 Oculus PC’s

**Shared Presence During an Immersive Virtual Performance**

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