**CoViz_2021: Interactive Experiments in Computer Vision**

**Technical Rider**

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**BRIEF:**

CoViz_2021 is a durational installation where the audience is the performer. Up to four audience members at a time dance in front of a motion-capture camera, and their actions are mapped onto cartoonish digital avatars in real-time.

**CAST/CREW REQUIREMENTS:**

-1x computer operator to install and run the installation, who also interacts with the audience to demonstrate the installation, takes requests, hypes people up, etc.

- Potentially 1x venue tech to help connect and run in-house sound and projection systems.

- Front of house support for audience management.

- An audience willing to be on their feet, or sit and watch others interact with the installation. (Wheelchair users can also likely participate! Though I haven't tested this out.)

- (Optional) a DJ or a band. Usually, the operator plays music directly from the installation computer.

- (Accessibility) There is no dialogue or script, though the operator will need to periodically explain (In English) how to interact with the installation, so sign language or language translators may be required for the operator if necessary for accessibility purposes.

**TECHNICAL REQUIREMENTS:**

- (Provided) High-end Windows 10 computer or laptop with a decent GPU, at least 1x USB3 port, an audio out, and an HDMI/DisplayPort out. Computer needs to run Microsoft Kinect v2 SDK software, and the Unity game engine. Mouse and keyboard.
- (Provided) a Kinect v2 infrared motion-capture camera, plus power and USB accessories.
- (Can be provided) Surge-protected power bars and extension cords.
- (Can be provided) A standard camera tripod, with camera shoe, for Kinect camera placement.
- (Provided) LED light strips to mark the "zone" of play / how close the audience can get to the camera. Run on an Arduino board, or plug-in LED color changing strips.
- (Need from venue) HD digital projector. (720p resolution minimum, 4K maximum.) Ideally hung from grid if it is a long-throw projector hung in-house, to avoid catching audience shadows on screen. Short-throw projector is also ideal, or a rear-projection onto a scrim or screen also works. Biggest thing is to have an unobstructed throw of image, as audience may get in the way if they're "on stage".
- (Need from venue) A screen, scrim, or wall to project onto.
- (Need from venue) PA sound system. Could be a speaker set installed with computer, or house PA system with an aux running from operator computer to house board.

- (Need from venue, optional but definitely a plus) A digital monitor to connect to operator's computer, to serve as a second screen for operator use. Can also be provided but harder to travel with. Does not have to be fancy.
- (Need from venue) Seating around play area, for audience to sit and watch, or take a break/ hang out.
- (Need from venue) At least one folding table for operator's computer, to be put "on stage" or wherever makes sense for the operator to set up.
- (Need from venue) HDMI cabling to connect to provided projector from the house.
- (Need from venue) Sound cabling to connect to provided PA system from the house.
- (Need from venue) Microphone for operator, to talk to audience over music. Connected to same PA system.
- (Need from venue) Gaff tape, any misc. cords or cables.
- (Need from venue) Power supply, on stage or to wherever operator station is set up.
- (Need from venue, optional) Internet access in venue.

**SPACE REQUIREMENTS:**

This has been installed in bars, outside in alleyways, and in conference venues. It is very flexible.

The main non-negotiable requirement is having enough space for the Kinect camera to function. It needs 6-10 feet of throw depthwise from camera placement to the "dance zone" for full-body tracking to work.

The audience dance zone can be small or big, but a minimum 10 feet by 10 feet square is required.

All together, it needs about 15-20 feet depth and 10 feet width minimum to function, for the audience interactivity space.

The Kinect camera uses infrared light to capture motion. It projects a cone of infrared light from the camera, and detects what is bounced back. The farther away from the camera, the wider the sensor picks up data. It can pick up a width of 30-40 feet at farther distances, and only a few feet very close to the camera.

The operator should be on stage, visible to everyone. They can be set up right beside the dance zone, right beside or under the projections, tucked in the corner of the stage, etc. But they cannot be hidden in the booth. It is important that nearly everything is controlled by the operator in-house, visible to the audience. Think DJ setup with a dance floor. The operator does not have a flashy presence, but will need to talk to/hype up the audience, and demonstrate how the installation works throughout its operation.

Projector placement is the other main consideration. If presented in a small space, a short-throw projector with a very wide-angle lens is preferred. Or, if a traditional throw is required, a projector mounted in the grid/on the ceiling/up in the booth is preferred. The main thing is to avoid the audience being in the projector's throw.

A large video wall is also an option, if projectors are not possible. A large TV wouldn't quite do it. We want the live animated image to be as big as possible.

Seating is nice to have. It can help define the 'dance zone', or serve as a place to chill and watch others interact with the piece. People like to watch, or need some time to work up the courage to get in front of the camera. Keep it casual, like a club. House seating in a traditional venue is fine, with maybe some chairs set up on stage to make it feel more inviting / less like a "play".

**CONTENT CONSIDERATIONS:**

This is a family-friendly piece, there is no explicit content, no foul language, in fact no language at all. There is music played to dance to, up to the discretion of the operator, but can be curated to be family-friendly/non-explicit content. There is a pre-set playlist on the theme of "breakfast" but that can be changed out as needed, it's a bit bizarre.

There are four "avatars" that are playable: a gender-neutral green person, and their 3 breakfast items: a femme bowl of cereal, an anxious cracked egg, and a bro banana.

There are two "scenes" available, that can be changed at will throughout the performance. The first, and most popular, is in a meadow in the forest. The avatars can move at will through the scene. Birds fly between trees. The time of day can be changed at will (daytime, sunrise/sunset, nighttime). The virtual camera is free, and can be moved at any time by the operator, so we can get close-ups of the avatars in the scene, or different perspectives without changing the in-real-life physical setup. There are a few other environmental interactions that the operator can trigger. Birds can flock, or summoned to nest in the trees, or be scared away.

The second scene is of an interior kitchen, with the oven on fire. The avatars are on a kitchen table, in a fixed position. The camera rotates around the table at a speed set by the operator. The breakfast avatars are playable, and the green person is not. It's more about having a panic attack in your kitchen, ha. I have found this one is not as popular as the more chill forest scene, but it is an option to switch to throughout the night.

Audience members can request to "be" certain avatars, though it takes the operator a few moments to switch the tracking around.

When an audience member leaves the 'dance zone', their avatar resets automatically, ready for the next person.

Up to four people can be tracked simultaneously. But it can be run with anywhere from 1-4 people. If no one is using it, the avatars reset, and wait for the next person to come in front of the camera.

**FOR MORE INFORMATION, CONTACT:**

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