AN EXPLORATION OF BEING PRESENT IN GRIEF

AN INTERACTIVE EXPERIENCE

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Part of the Digital Media Studio Project at the University of Edinburgh, 2025

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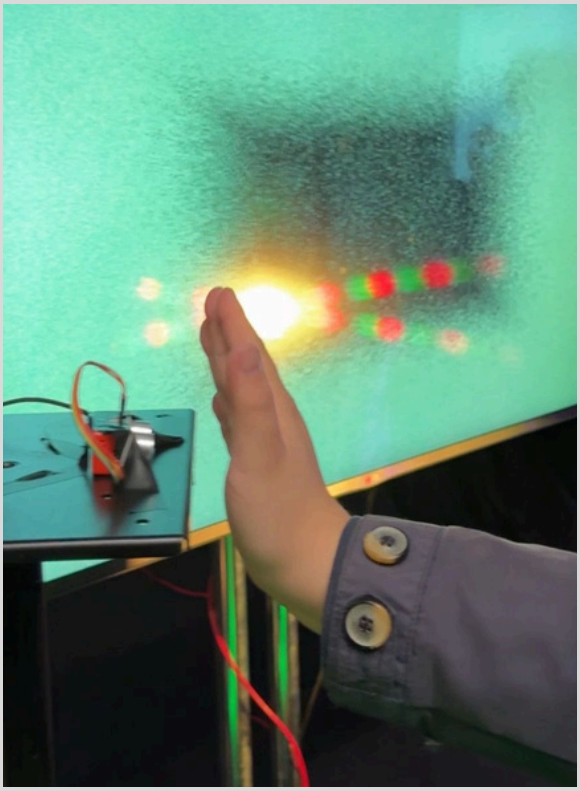
THE CONCEPT OF PRESENCE

Our project began with a question: what does it mean to be present? Through weeks of dialogue, sketches, and sensory experiments, we found that presence often reveals itself most powerfully in its absence. The space left behind by a person, a moment, or a feeling lingers. It becomes a memory felt more than seen.

Grief became the anchor of this exploration. A universal experience that blurs the line between what's lost and what remains. It loops, pauses, and erupts. It is deeply personal, yet profoundly shared.

This installation is an attempt to give form to that emotional terrain, a space where presence is not just observed but felt and shaped through interaction. Where absence doesn't sit still, but stirs, shifts, and slowly softens as people move through it, together.

Often, we find ourselves questioning the balance between presence and absence. The contrast between them shapes our emotional journey, sometimes with unpredictable turns. When we step back, we recognize that grief isn't linear. It's not something you pass through but rather something you live with, as it evolves over time. The experience of grief teaches us that we don't need to navigate it alone.



Background, Inspiration & Goals

Our starting point was broad: the idea of presence. But early discussions pushed us to ask how environments could reflect emotional states rather than just contain them. We weren't looking to tell a story we wanted to build a system that reacted to people in real time.

Core Goal

To build a space where the emotional climate is co-created with the visitor.

The aim wasn't just to represent grief, but to offer participants a sense of control and collective authorship in how the space transforms. The more people interact, the more the system shifts. That shift isn't linear. It mirrors the way grief moves: uncertain, layered, and shared.

These moodboards were created early in the process to guide the emotional tone and aesthetic direction of the installation. They helped translate abstract concepts like presence, absence, and grief into visual and sensory references for the space.

SOUND CREATION

In the sound part of this project, we explored the delicate relationship between sound and emotion, especially how to accurately express the five emotional states in the Kübler-Ross model through sound. Our goal is not just to "reproduce" emotions, but to guide the audience to feel, resonate, and even stimulate their awareness of their own inner state. Sound is not only a component of the atmosphere, but also the dominant medium for emotional expression throughout the entire installation.

In the process of interaction and connection between sound design and emotions, we first analyzed the relationship between the psychological characteristics and auditory cues of each emotional stage. For example, the "denial" stage is often accompanied by psychological numbness and unreality. We use unclear, low-dynamic range ambient sound and add intermittent blank silence segments to make the audience feel as if they are in a dream; the "anger" stage conveys the outbreak and instability of internal repressed emotions through dramatic dynamic contrast, dissonant intervals and high-frequency sound effects. Sound here is not just a symbol, but a psychological trigger that guides the listener to resonate at the physiological and emotional levels.

In order to express the psychological state of back-and-forth testing, hope and powerlessness in "bargaining", we used a cyclic rhythm and a faint melody, adding subtle disturbances to make the sound itself present a sense of uncertainty and struggle. We then added extremely delicate timbre processing in the "acceptance" stage. Although the audio structure tends to be calm, it always retains weak low-frequency disturbances and unstable harmonics to show the remaining worries and emotions that have not been completely let go behind acceptance.

Throughout the process, we always regard sound as the "body of emotion" to make it concrete for those unspeakable psychological processes. It is not a narration or a background, but the echo of emotion itself in space. We believe that only when the sound truly understands the weight of emotion can the audience be surrounded and touched by emotion. This expression method of deep interweaving of sound and psychological state is the core of the emotional communication of this project, and it is also the most important thinking and practical results of our sound design.

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INTERACTIVE SOUND SYSTEM

To build the interactivity of the installation, we used Wwise, a game audio middleware, to develop a responsive sound system that reacts in real time to user proximity data received from Unity.

Structure per Stage

Each of the five emotional stages is designed using a blend container structure:
▪ One central stereo ambience (constant)
▪ Four reactive ambiences, each mapped to a physical speaker: Front Left, Front Right, Back Left, Back Right
These are either hard-panned or surround-panned, but still controlled by their corresponding sensor input.

Sound Effects and Randomisation

Each stage includes SFX containers with randomised pitch, delay and spatialisation to avoid repetition and enhance the immersive quality. For example, the Depression stage includes water-like textures that shift subtly each time.

Sensor Interaction (RTPC Mapping)

All four sensors control their respective ambience tracks using RTPCs (Real-Time Parameter Controls) in Wwise.

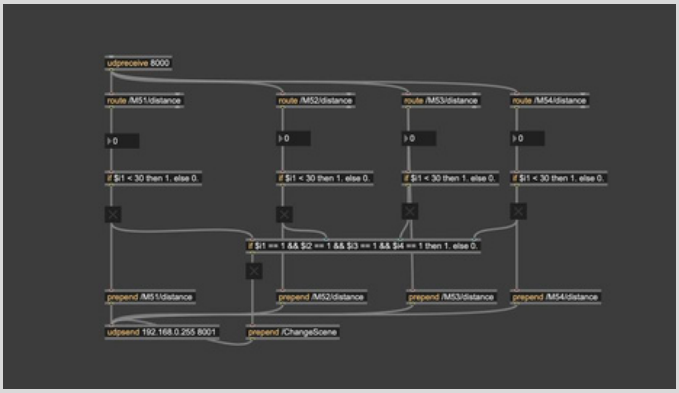
- Input range: 0–100 from Arduino distance sensors
- Gain fades from 0 dB at distance 0 to -192 dB at distance 65

This range was calibrated to ensure a smooth audio fade as the user approaches.

Scene Progression Logic

When all four sensors reach their maximum level, Unity triggers a scene transition. A unique thunder sound effect for each stage marks this change

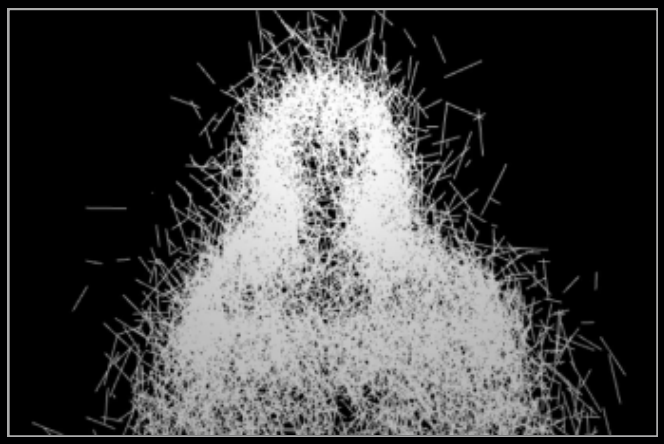
After the fifth stage (Acceptance), the sequence returns to Denial This setup gave us precise creative and technical control, allowing sound to become an active, expressive element.



VISUALS + THEIR INTERACTIVITY

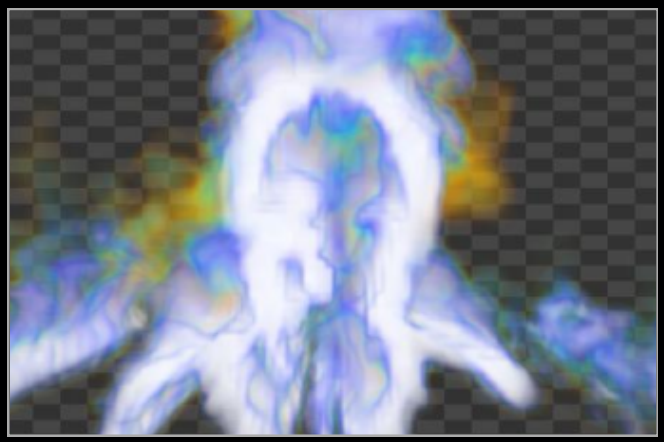
The visuals respond in real-time to the viewer's proximity, using distance sensors to reflect emotional states through movement, color, and distortion. Viewers don't just observe—they shape the visuals with their presence. Once all sensors are triggered, the installation shifts to the next emotional stage, mirroring the non-linear progression of emotion.

1. Denial



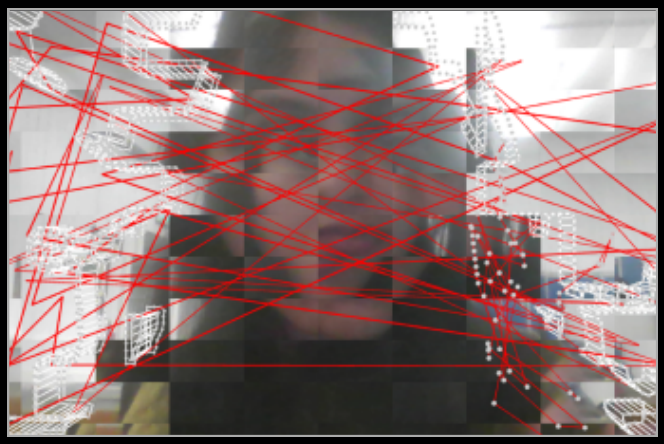
Color shift and glow intensity controlled via proximity values remapped in TouchDesigner. Particle expansion and decentralization reflect emotional detachment through GLSL-driven scale and dispersion modifiers.

2. Anger



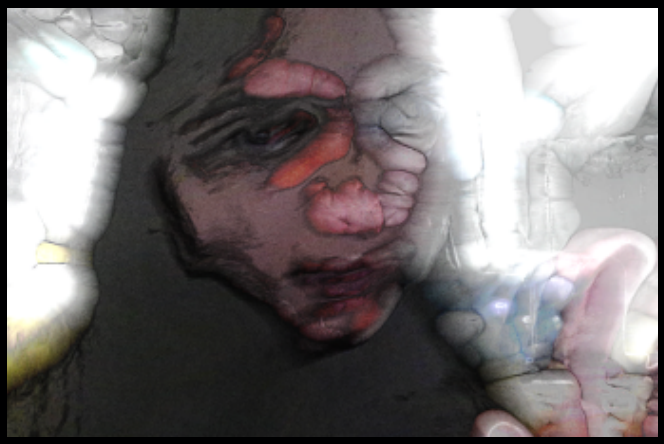
Volumetric flames adjust in size, color, and opacity using high-frequency sensor input. Flame dynamics driven by noise textures and real-time CHOP math adjustments for dramatic spikes.

3. Bargaining



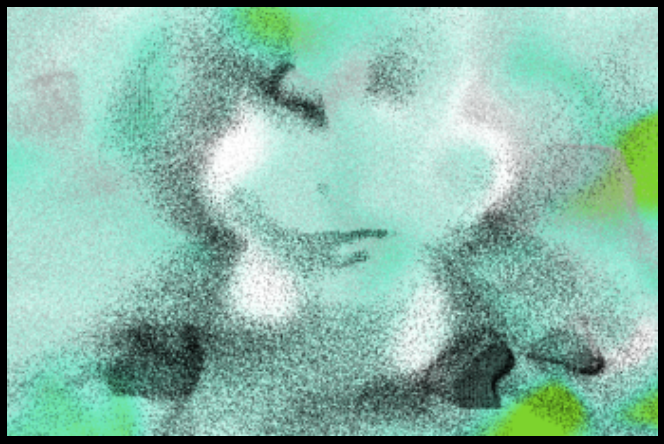
Line visuals respond to distance: X-axis stretch, distortion shaders, and focus-point shifts simulate inner conflict. TouchDesigner SOPs and displacement effects modulate character instability.

4. Depression



Sensor data maps to greyscale levels, watercolor flow direction, and zoom. GLSL shaders control fluid-like visuals, and feedback TOP loops emphasize emotional depth and stagnation.

5. Acceptance



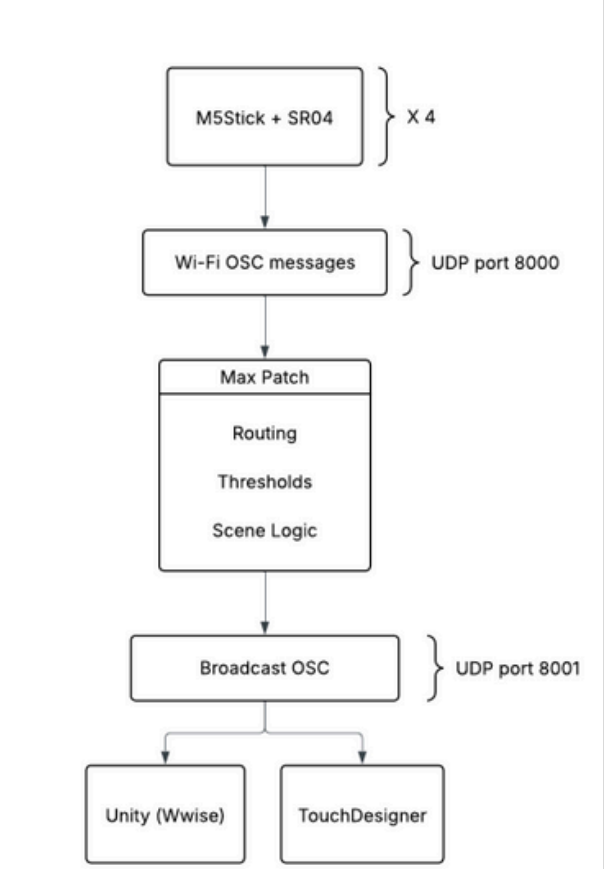
Particle systems shift between dispersion and cohesion based on viewer distance. Grayscale values and background saturation controlled via proximity channels, highlighting fragile emotional resolution.

TECHNICAL SETUP

This interactive installation uses four M5StickC-Plus microcontrollers connected to HC-SR04 ultrasonic sensors. Each sensor measures the distance to a viewer and sends the data wirelessly to a central system using Open Sound Control (OSC) protocol.

How It Works

- The M5StickC-Plus microcontroller collects data from the HC-SR04 sensor and sends it over Wi-Fi to the central system.
- Each sensor measures the time it takes for a sound wave to reflect back from an object, determining the distance.
- To ensure accurate readings, the system uses a rolling average, smoothing out the data to avoid errors.
- When all sensors are triggered, the system transitions to the next emotional stage, marked by a thunder sound.



System Architecture

Communication

The data is processed by a Max patch, which sends control messages to the audio system (Unity + Wwise) and visuals (TouchDesigner). This lets the sound and visuals respond to the viewer's proximity in real time.

VISITOR EXPERIENCE

As visitors enter, they find themselves reflected on the screens, their movements directly influencing the visual and audio landscape. From the initial overwhelming presence of sensory inputs, they gradually navigate through the emotional stages of grief, seeing their own interactions shape the space.

Visitors enter the space, where a heartbeat rhythm fills the air and a light strip pulses to its beat. Four sensors around the room respond to movement, changing the lighting and atmosphere. Each shift in proximity subtly guides visitors through the space.

On three screens, visuals evolve with the interaction, while the lights and sounds shift between stages. When all sensors are triggered, the space automatically moves to the next phase, creating a dynamic, ever-changing environment.

ENTRY POINT	EXPLORATION AND INTERACTION	PROGRESSION	REGRESSION (No Interaction)
User Action: Enters the dark room.	**User Action:** Approaches interactive sensors.	**User Action:** Multiple visitors engage with all the sensors at the same moment.	**User Action:** Visitors stop interacting or leave.
Experience: Chaotic visuals & unsettling sounds (denial, anger, depression).	**Experience:** Sensors respond to movement and proximity.	**Experience:** Visuals shift with a thunderous sound.	**Experience:** Chaos returns, visuals fragment, sound becomes unsettling.
Interaction: None	**Interaction:** Subtle shifts in visuals and sound.	**Interaction:** Environment transitions to the subsequent grief stage.	**Interaction:** Reinforces that grief is non-linear.

ACHIEVEMENTS & REFLECTIONS

Achievements

The exhibition was well-received, with visitors clearly enjoying the interactive nature of the experience. The concept of emotional exploration allowed for varied interpretations and responses, leading to an engaging environment. What stood out most was the potential for the installation to take on nearly infinite versions, depending on how each individual interacted with it. This unique flexibility meant that every experience could feel new and personal

Reflections & Challenges

While the exhibition was successful in many ways, some challenges arose, particularly with sensor responsiveness and clarity of theme. As mentioned earlier, sensor timing inconsistencies affected immersion. Additionally, some visitors didn't fully grasp the emotional theme until after an explanation. Reflecting on this, future adjustments could include clearer visual cues and more intuitive interactions to ensure the emotional journey is immediately understood and felt.

THANK YOU

DIGITAL MEDIA STUDIO PROJECT