Project Objective

Build an interactive four-screen system in TouchDesigner that uses **Teachable Machine** and **MediaPipe** to detect staged user interactions. The system responds to "coin insertion" and follow-up body/face gestures by triggering different video sequences. Each video needs to be played **with synchronized audio**, and the entire experience **automatically resets** after completion.

Video ID	Purpose	Playback	Loops?	Audio?	Freeze at End?
a1–a4	Pre-coin idle screen loops	Separate loop	✅	✅	❌
b	After coin insertion is done	All screens	❌	✅	✅ (freeze)
b_punishment	If smile gesture not done after b	All screens	✅	✅	❌
c	After smile gesture is done	All screens	❌	✅	✅ (freeze)
c_punishment	If eyes not closed after c	All screens	✅	✅	❌

System Flow & States (with automatic reset)

Phase 1: Pre-Coin (Idle Loop)

- **Behavior:**
  - All four screens play *a1, a2, a3, a4* in **independent loops**.
  - Audience may watch casually and decide that when they want to insert the coin.
- **Trigger:**
  - Teachable Machine detects coin = 100% confidence.
  - Introduce a **3-second delay** before transition.
    - Purpose: simulate "inserting" coin into a prop box, not just raising it.
- **Transition:**
  - After 3s delay → all four screens **switch to *video b***
  - *Video b* **plays from beginning**, with audio.
  - **Freeze on last frame** after playing once (no loop).

Phase 2: After-coin → 5s Gesture Detection (Smile with Fingers)

- **During *video b's* freeze frame, wait 5 seconds for gesture detection.**
- **MediaPipe Detection Inputs:** mouthSmileLeft; mouthSmileRight; h1:index_finger_tip:y; h2:index_finger_tip:y

- **Success Criteria:**
  - All 4 values must be **greater than 0.5**
- **Outcomes:**
  - ✅ Gesture Detected: switch to *video c* (starts from beginning, plays once, freeze at end).
  - ❌ No Gesture in 5s: switch to *b_punishment* (looped playback)
- **Recovery Option:**
  - While *b_punishment* is looping, system **continues checking for gesture**.
  - If gesture is detected at any point → **interrupt punishment → play *video c***

Phase 3: Post-c → 5s Eye Closure Detection

- **After *video c* ends, freeze on last frame → start 5-second timer.**
- **MediaPipe Blink Inputs:** eyeBlinkLeft, eyeBlinkRight
- **Success Criteria:**
  - Both eyeBlinkLeft and eyeBlinkRight values must stay **above 0.65 for at least ~3 seconds** to count as valid eye closure.
  - *(Can you help me confirm this threshold and duration are valid for detecting intentional eye closure?)*
- **Outcomes:**
  - ✅ Eyes closed (sustained above 0.65) → all screens fade to black / experience ends.
  - ❌ Eyes remain open → transition to *c_punishment* (looping)
- **Recovery Option:**
  - While *c_punishment* is playing, continue checking blink.
  - If eyes close at any time → **interrupt punishment and finish experience**

Final Phase: System Reset

- **After user successfully closes eyes (either after *video c* or during *c_punishment*):**
  - End the experience: all screens fade to black
  - System automatically resets:
    - Playback returns to looping a1–a4
    - Internal state variables reset to allow new audience interaction
    - No manual intervention needed.