zant

October 4-5

TINY_HACK

Turin

The first Embedded AI Vision hackathon

Focus AI

cinecla

Team 4, Participant names

with the support of:

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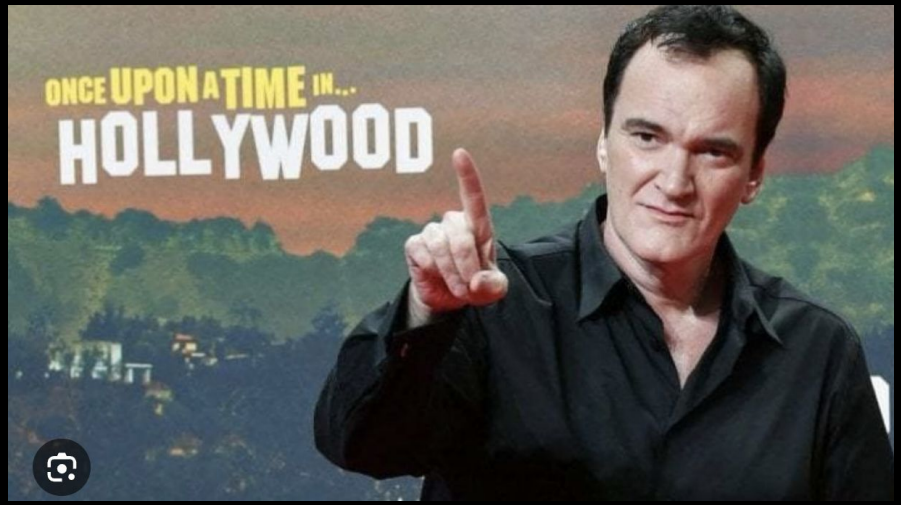
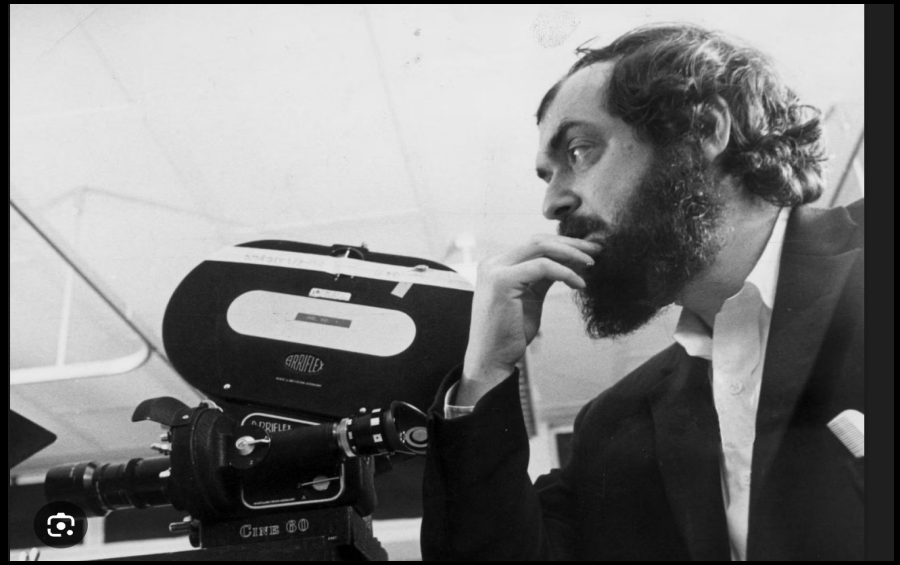
Imagine being a film director in Hollywood





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You are disrupting the industry by learning what **emotions people feel** while watching your movie BASED ON DATA

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You want to put a **camera** in front of every single **seat** and record the **impressions of the watchers** while watching your movie live

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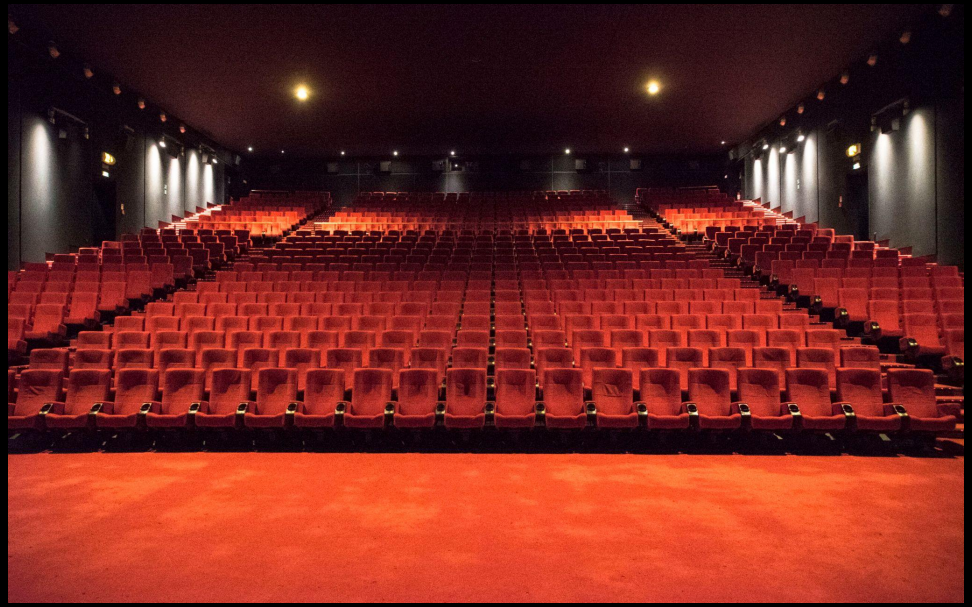

This is **UCI Cinema** in Turin

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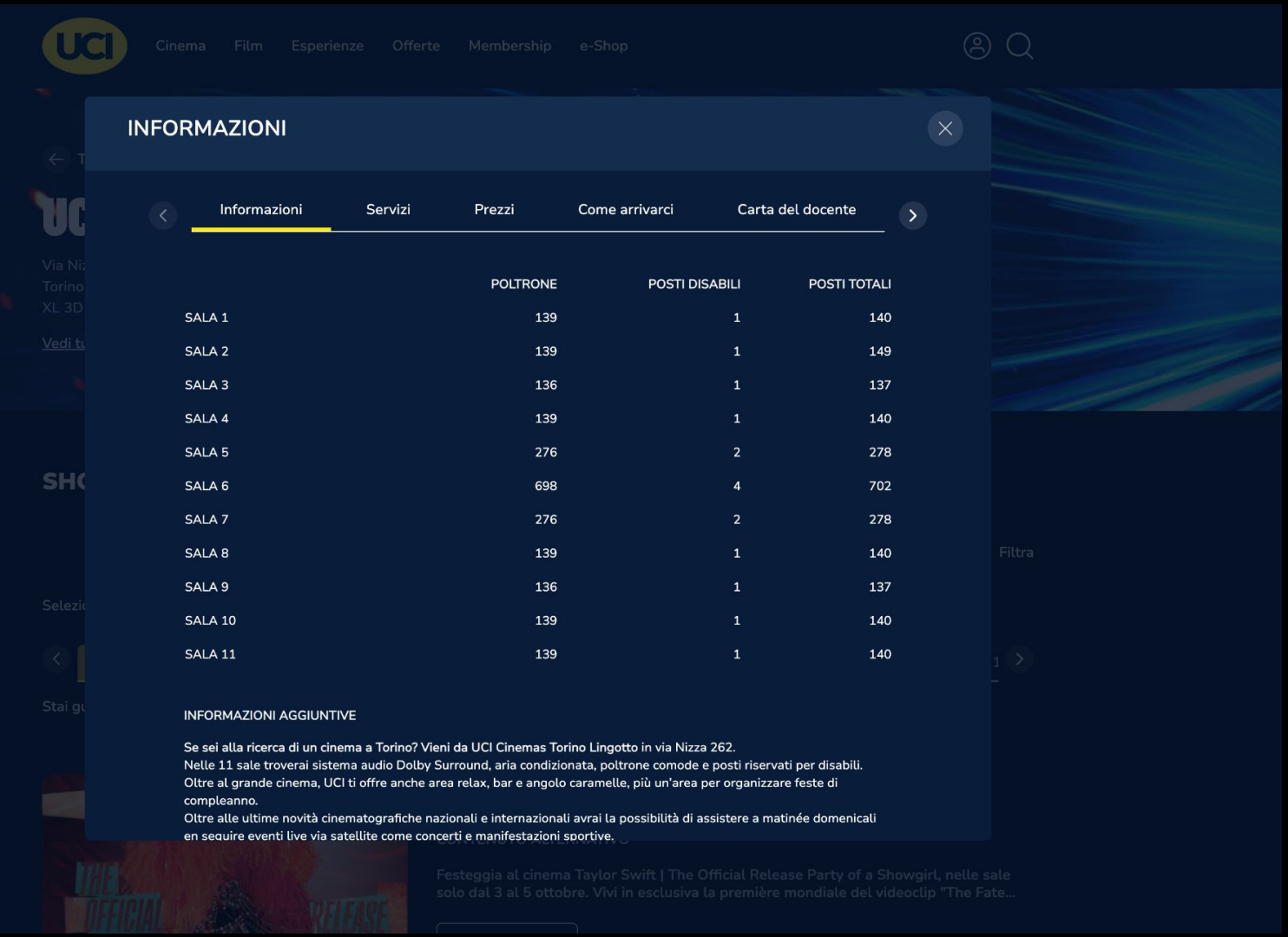

Focus AI

It has 11 rooms with 140 seats each.

Total: 1540 seats.

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1540 SEATS!!!!

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Imagine 1540 heavy online ML processes at the same time!!!

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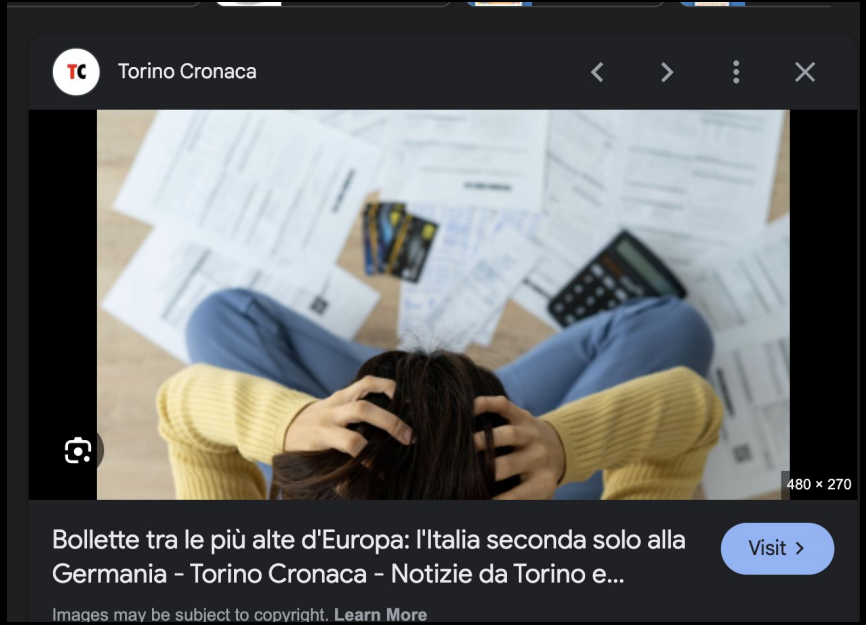

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But luckily we have

The Zant Project

Foc s AI

ARDUINO

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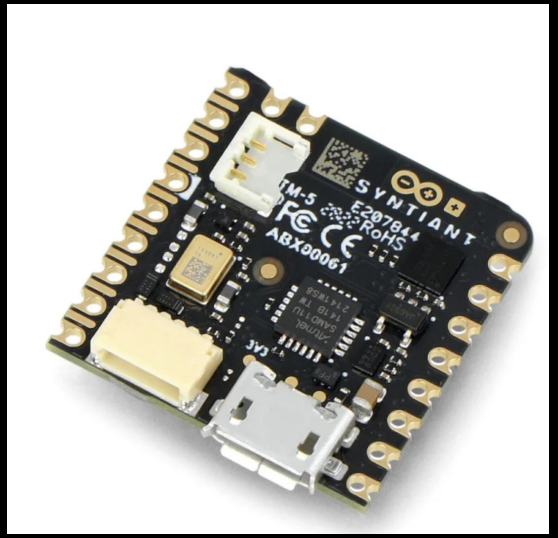
So we put 1 **Arduino NICLA VISION** in front of every seat and run **FOCOOS** models compiled with **Zant** to do ML and collect the data



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1. Project Overview

Cinecla connects a Nicla to every spectator in a cinema, to capture emotions and viewers' responses during a movie

Two use cases:

- it helps film makers understand how the audience reacts to their movies (they can understand which scenes resonate, bore, shock, or move the audience)
- each spectator can access a short video showing their own reactions

2. Dataset & Model

📊 Dataset:

we merged relevant face emotion datasets

- collection: face emotion dataset on roboflow
- augmentation: horizontal flip, rotation, zoom out

🧠 Model architecture:

- fai-cls-s-coco: small multiclass classification model

⚖️ Trade-offs:

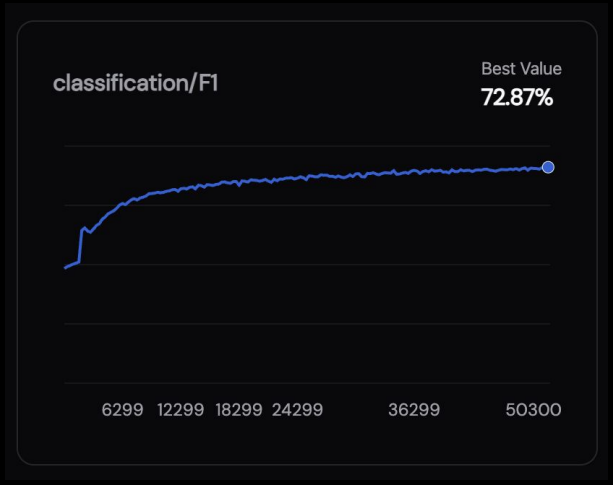
accuracy vs. image and model size

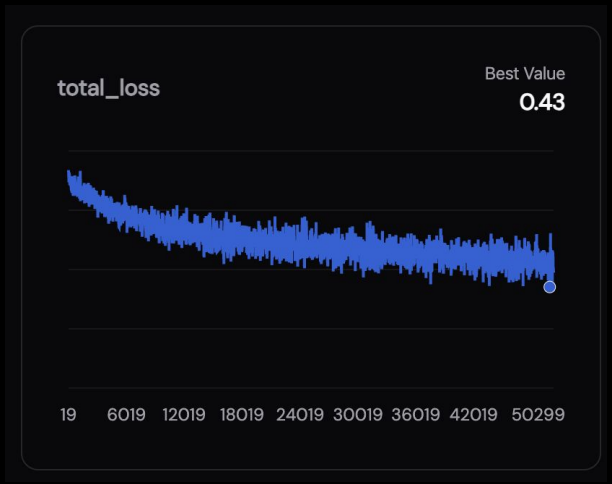
2. Dataset & Model

Classes
3
negative neutral positive

Loss
0.5062

Accuracy (classification/F1)
73%





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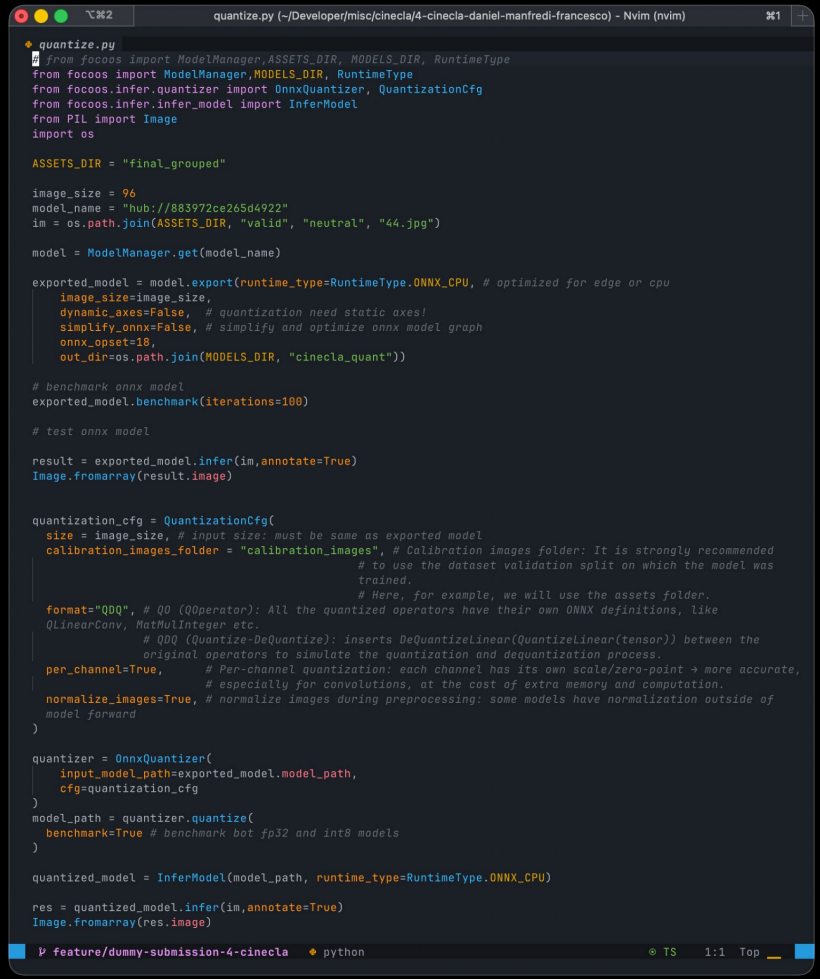
2. Dataset & Model



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3. Deployment Pipeline

We have a **Flask backend** communicating via websocket to **React frontend**, and then we just listen to json streams from the NICLAs on serial ports.

The NICLAS send json objects containing the frame raw data and the inference.

4. Demo & User Experience

live demo:

https://youtu.be/oKET4S8TAfw

screen recording:

https://youtu.be/mRasYDhN6X0

While the viewers are watching the video, the Nicla **captures their emotions** and streams them to a client

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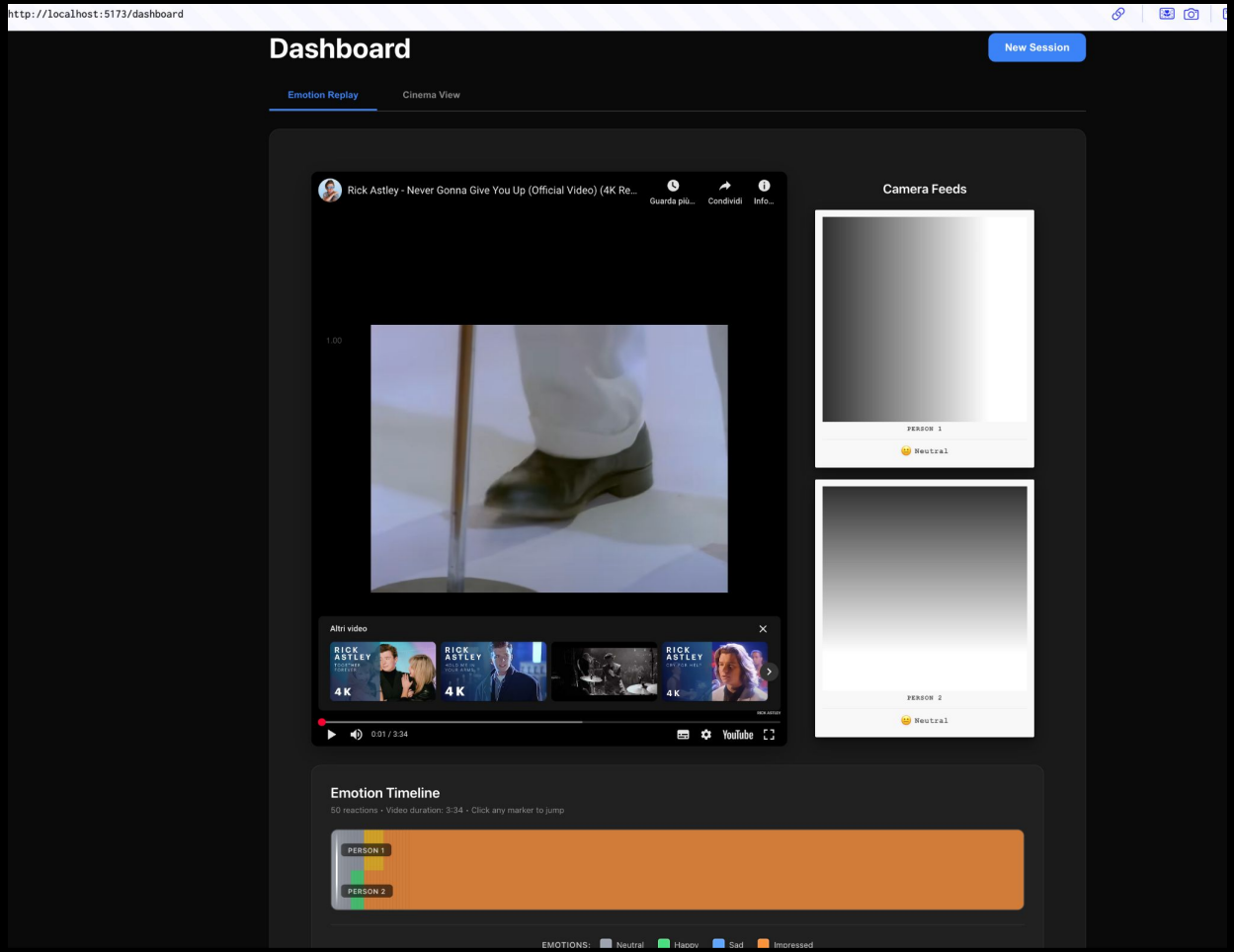


There is also a dashboard for the film-maker to replay the faces of the viewers and understand their emotions. The video is synced with the Nicla frames and the predicted emotions.

PERSON 1

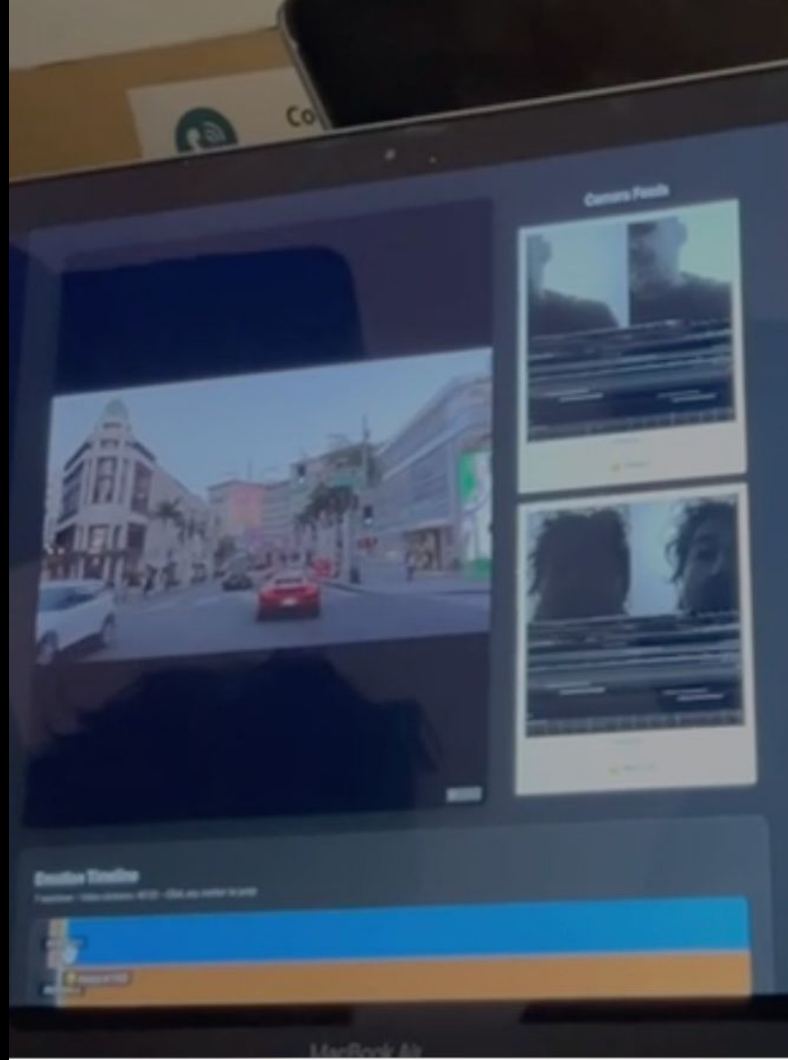
Happy

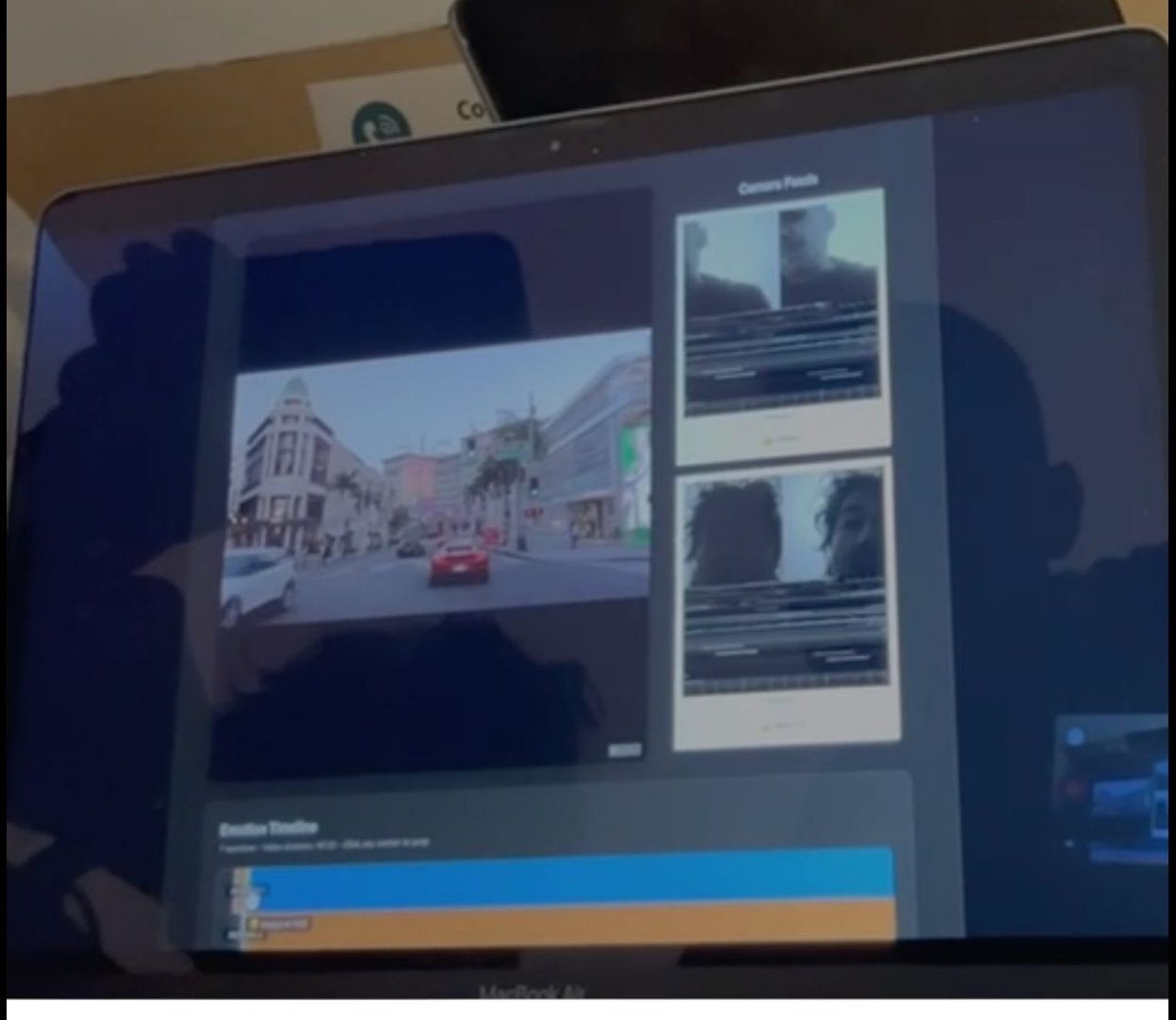
PERSON 2

Impressed

Emotion Timeline

31 reactions • Video duration: 40:22 • Click any marker to jump





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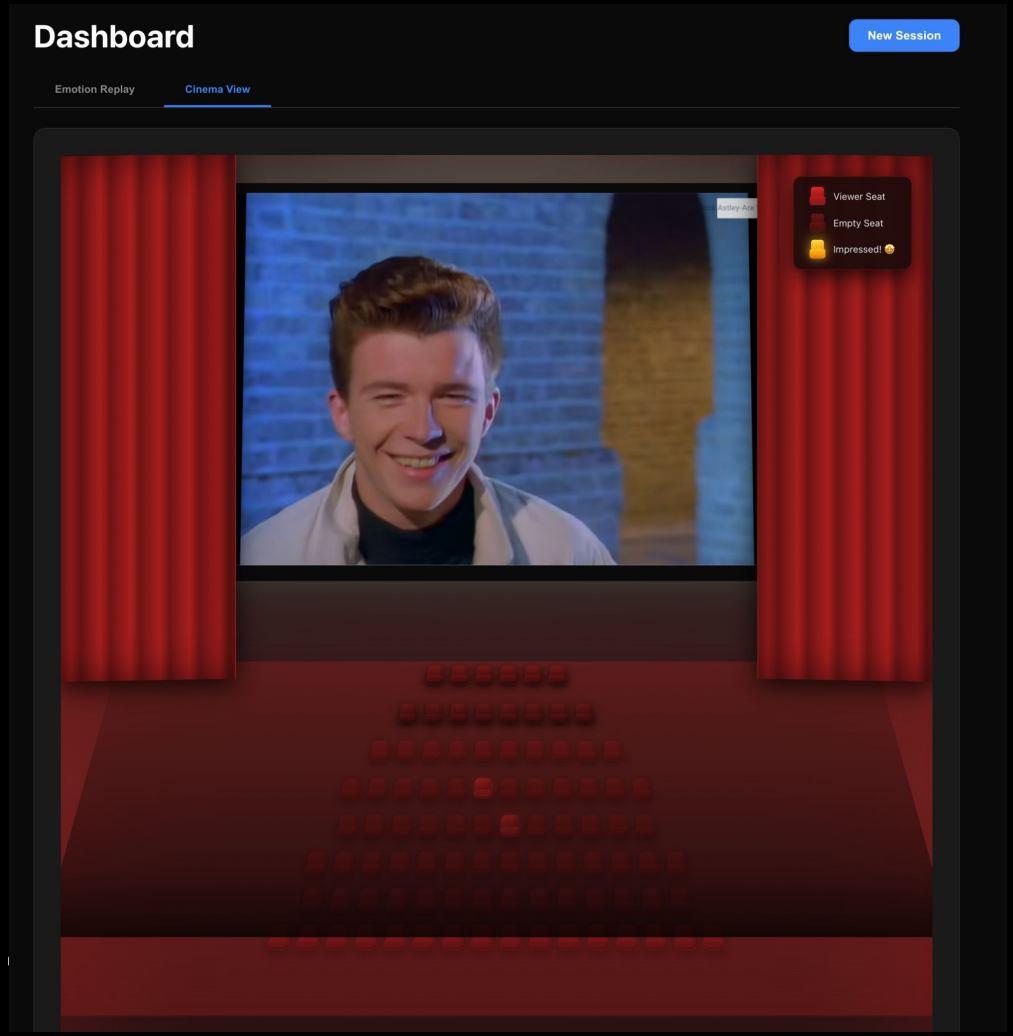
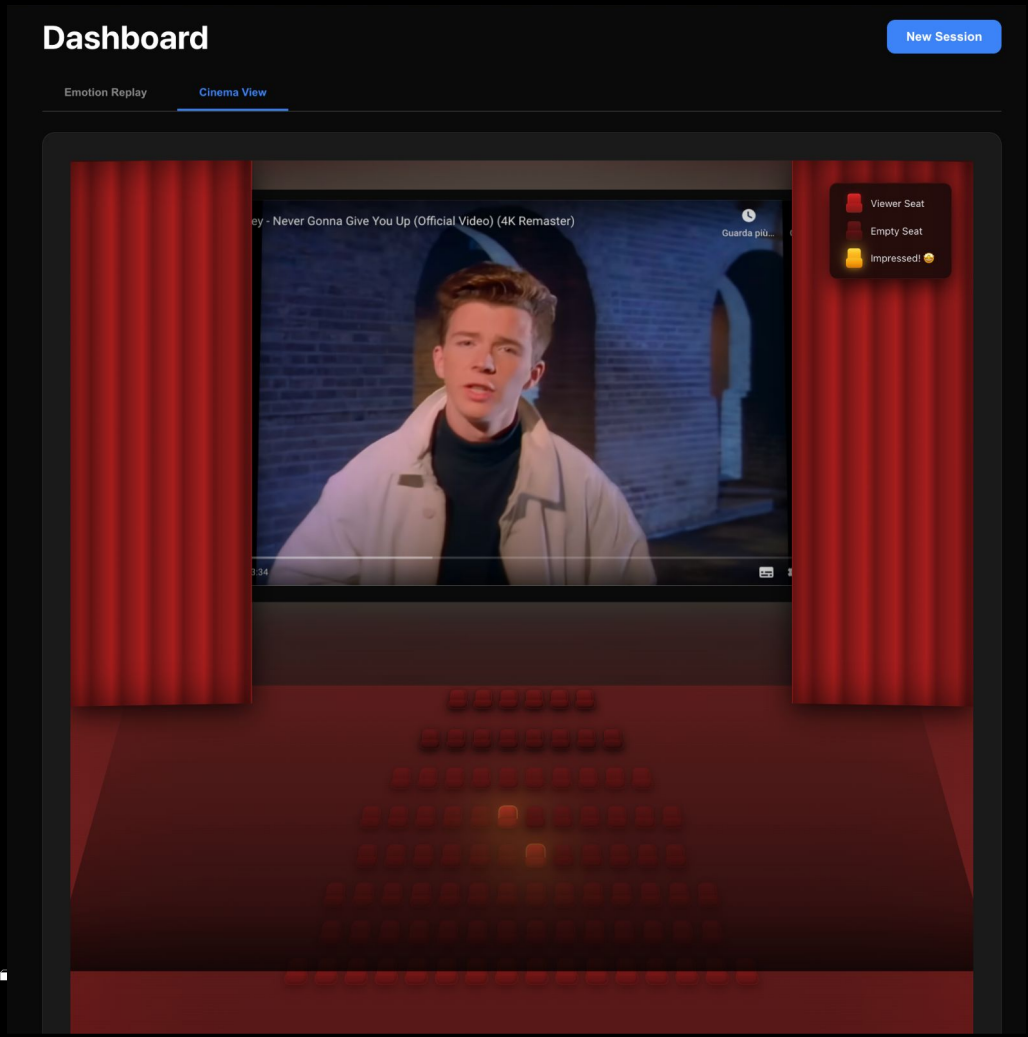


Finally, there's also
a **cinema view** !



The seats light up when the viewer who's seating there is "**impressed**"

thank you very much