

PREMIERE: PERFORMING ARTS IN A NEW ERA

AI and XR tools for better understanding, preservation, enjoyment and accessibility

Vassilis Katsouros
Athena Research Center



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the European Union

Infoday for Cluster 2 Culture, Creativity and Inclusive Society

Athens, 6 December 2023

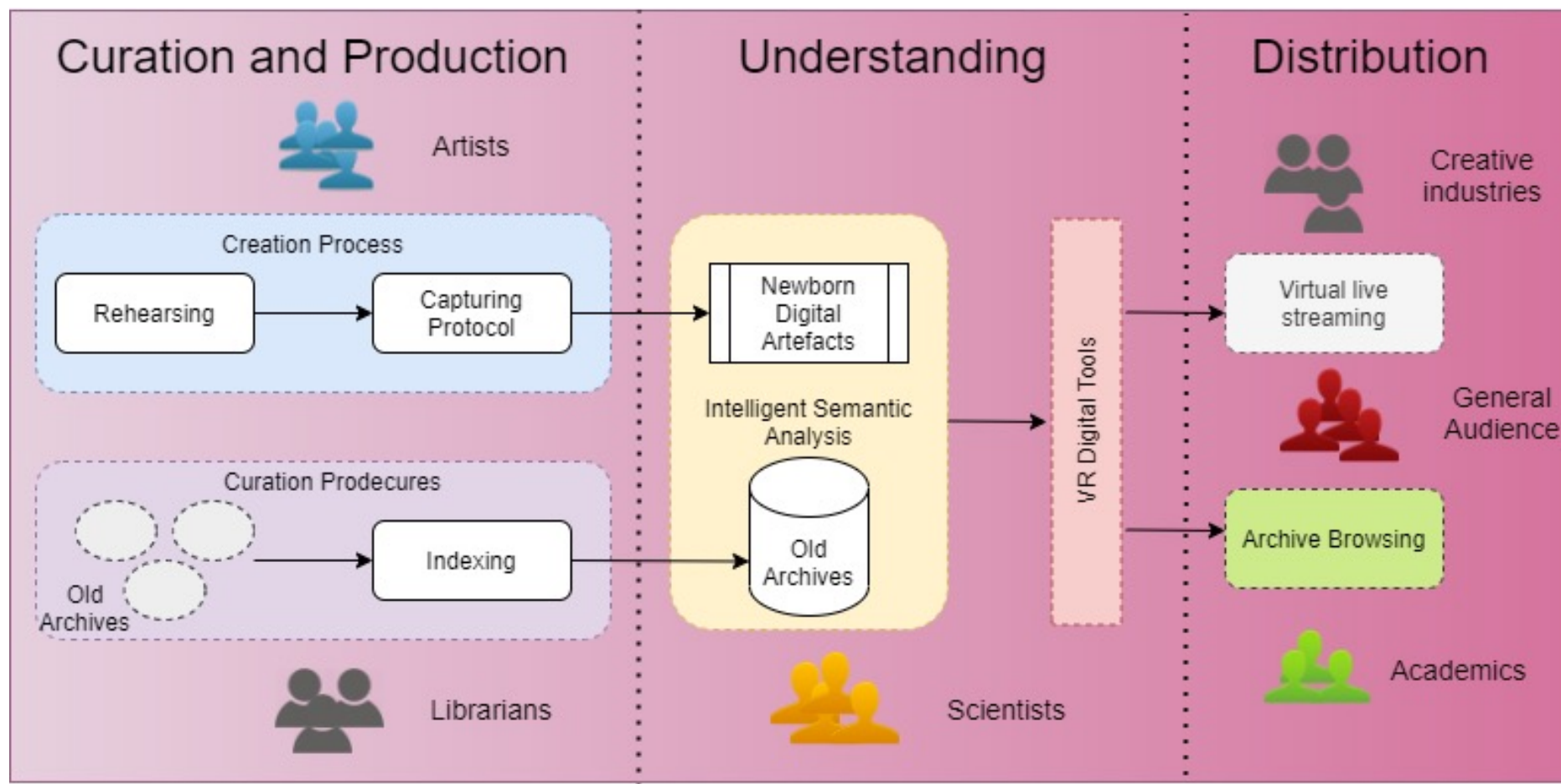
PREMIERE project overview and outcomes



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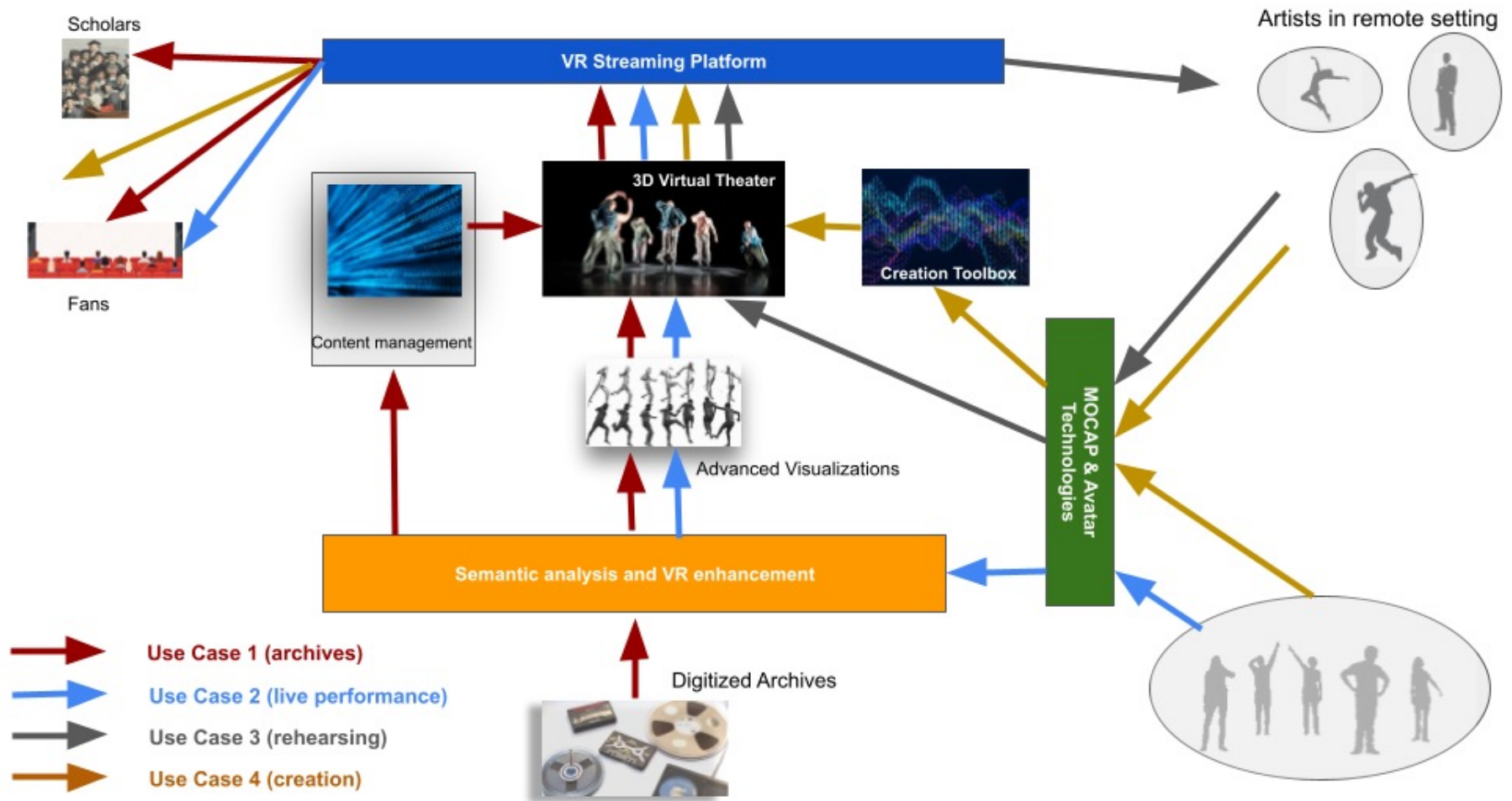
The concept



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AI/XR technologies and use cases



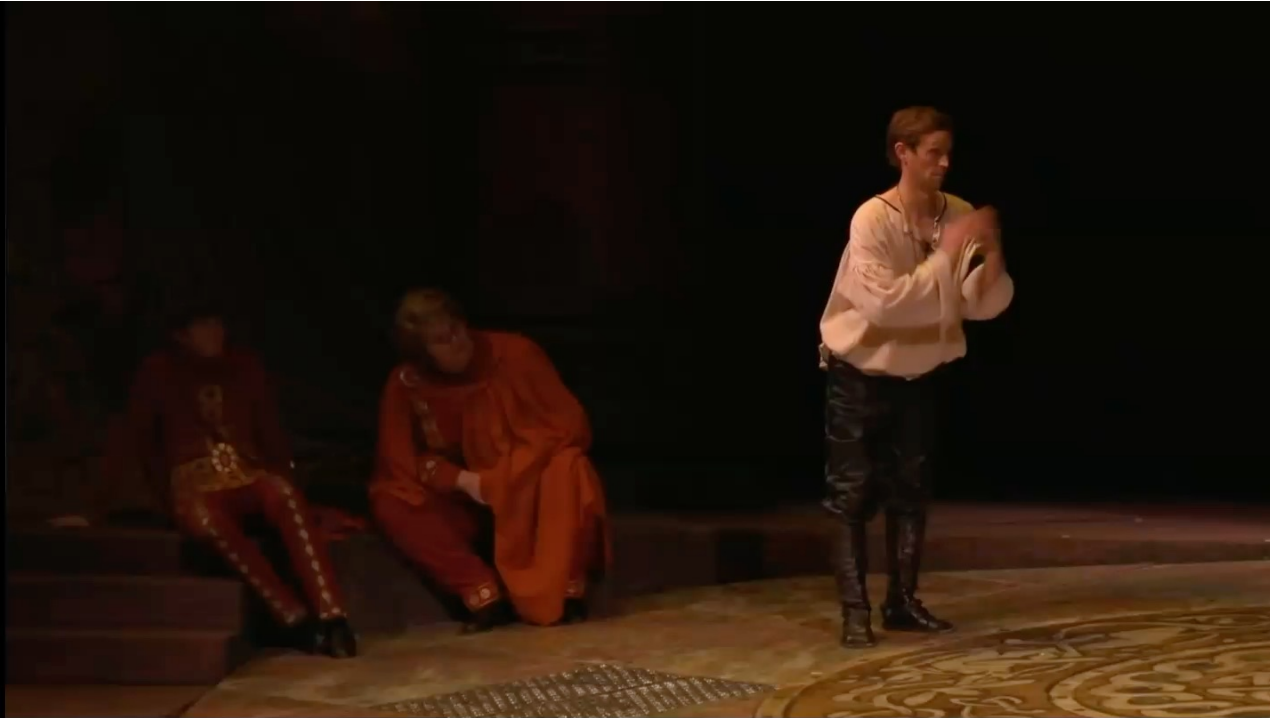
ASR for subtitle generation



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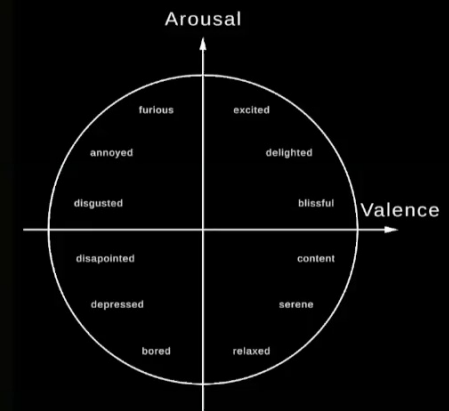
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Speaker sentiment



Polonius
Hamlet

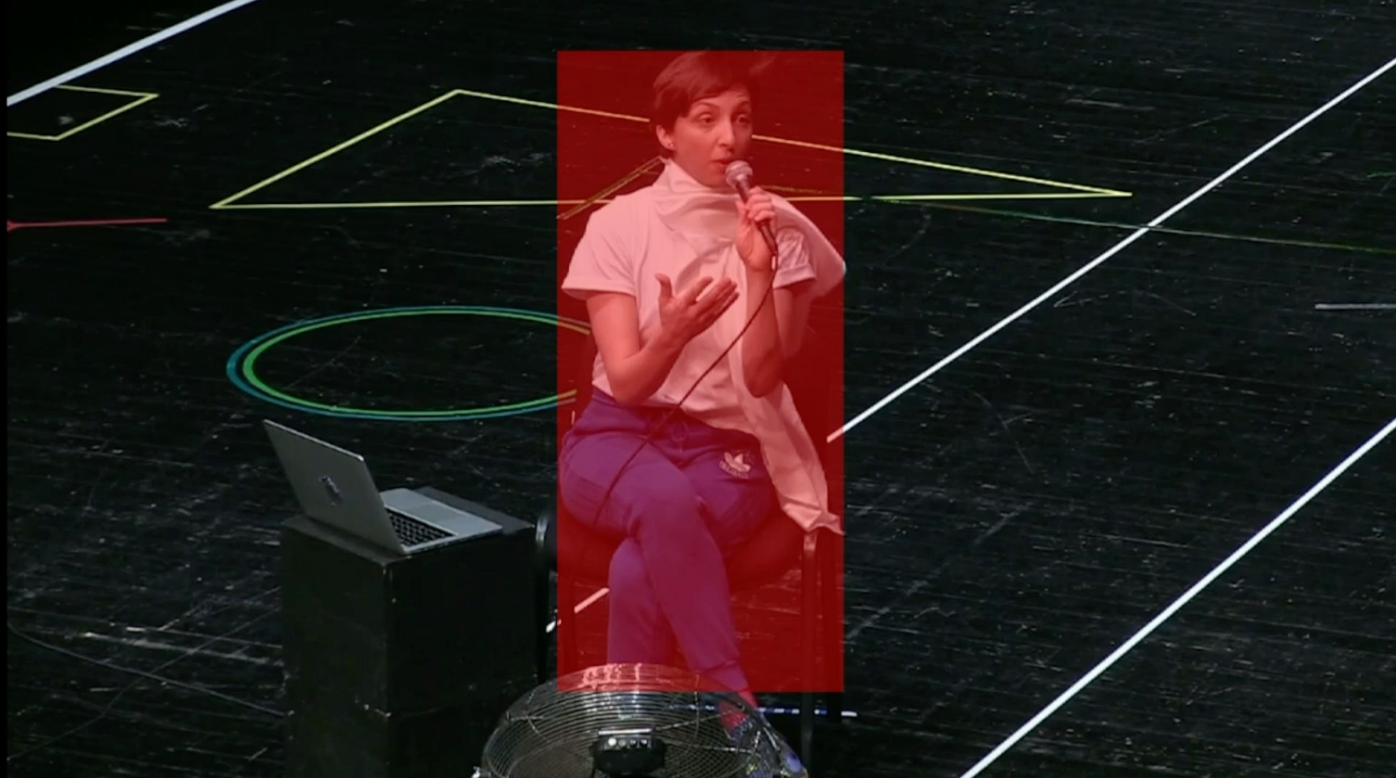
Speaker Sentiment



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Person detection and tracking



Bounding Box details

id:
is thing:
category:
area:
min:
max:

Objects in frame

id : category : color

1 : laptop :
2 : chair :
3 : floor-other-merged :
4 : person :
5 : chair :

Text Emotion

sentiment: POSITIVE
emotion: neutral
emotion finegrained: neutral

Name Entities

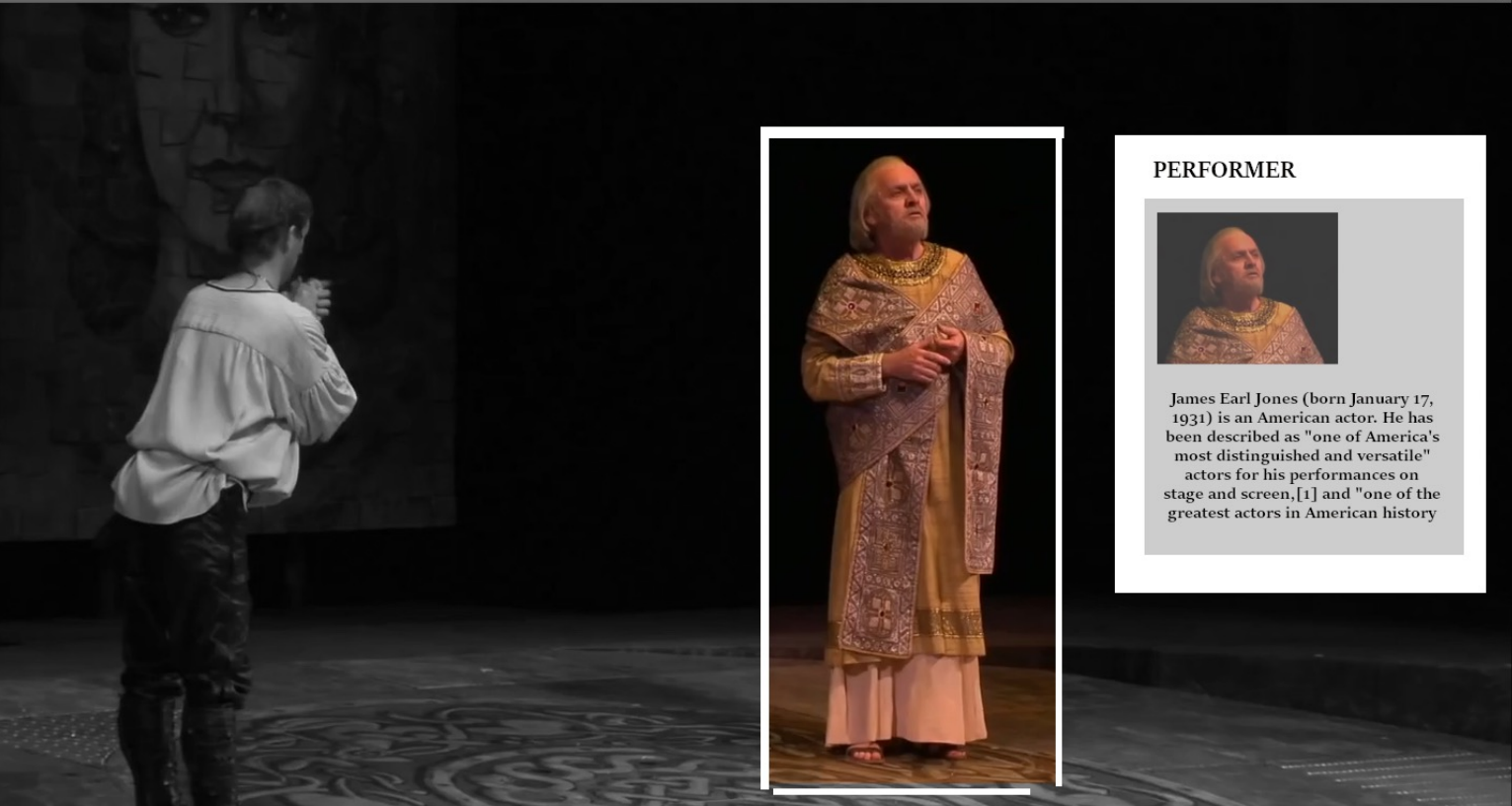
entity : category

676 0:27 / 7:30


da terra, assim individualidade, à sua vontade de movimento.

Cross media linking

PERFORMANCE NAME / CURRENT SCENE/ PERSON_IDENTIFIED_1



PERFORMER



James Earl Jones (born January 17, 1931) is an American actor. He has been described as "one of America's most distinguished and versatile" actors for his performances on stage and screen,[1] and "one of the greatest actors in American history"

PERFORMERS

James Earl Jones

Jean CLaude Van Dam

PRODUCTION

SCRIPT & NARRATIVE

Script

Characters

Hamlet

Claudius

Polonius

.....

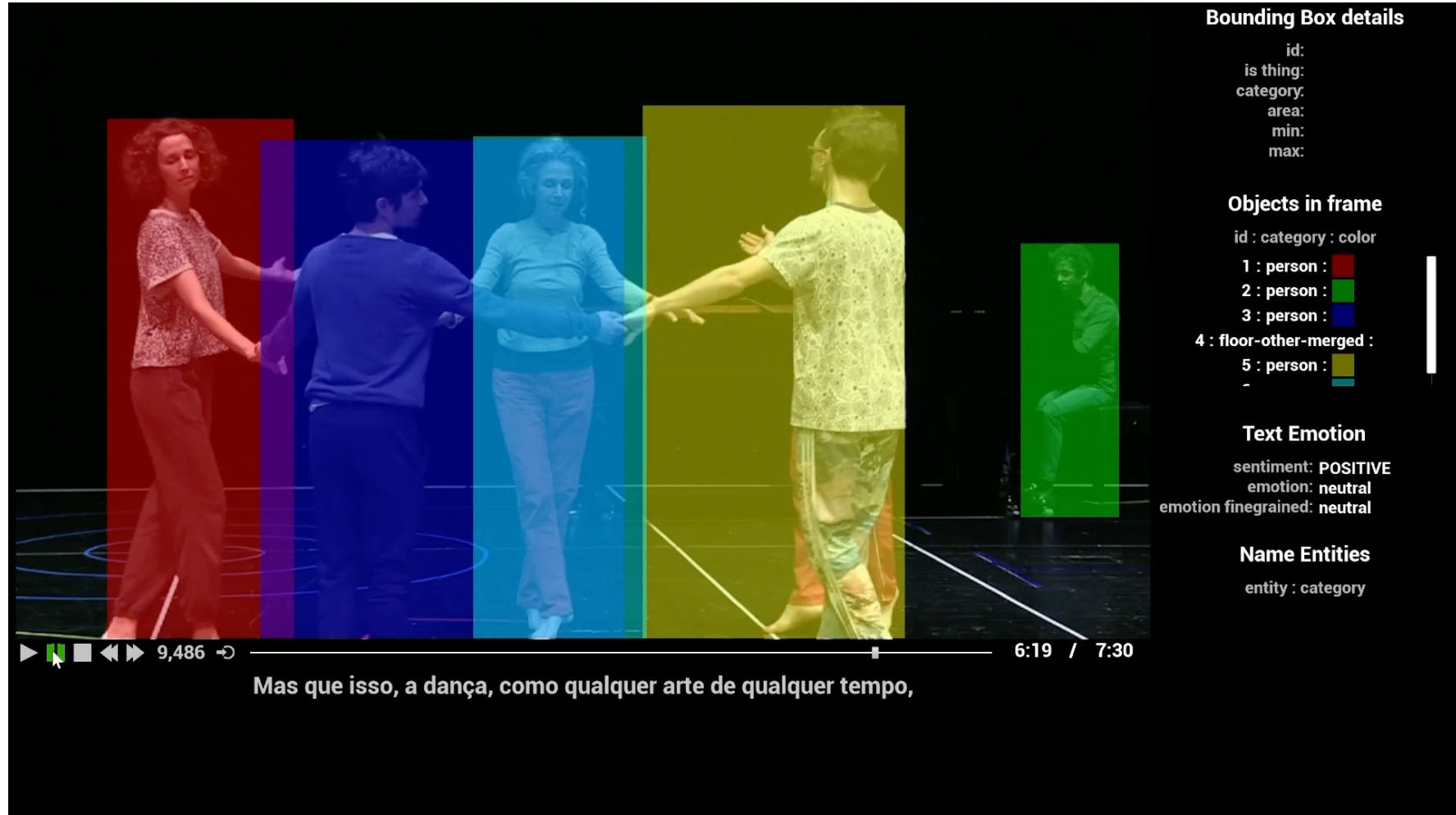
Plot & Storyline

Dramatic structure

Theme, message & symbolisms

NOTES & COMMENTS

Name entities recognition



The video player displays a dance performance with four dancers. Each dancer is enclosed in a colored bounding box: red for the first dancer (left), blue for the second, cyan for the third, and yellow for the fourth (right). A fifth bounding box, green, is visible on the right side of the frame, likely representing the floor or background.

Bounding Box details

- id:
- is thing:
- category:
- area:
- min:
- max:

Objects in frame

- id : category : color
- 1 : person : red
- 2 : person : blue
- 3 : person : cyan
- 4 : floor-other-merged : yellow
- 5 : person : green

Text Emotion

- sentiment: POSITIVE
- emotion: neutral
- emotion finegrained: neutral

Name Entities

- entity : category

9,486 6:19 / 7:30

Mas que isso, a dança, como qualquer arte de qualquer tempo,

Sound and music

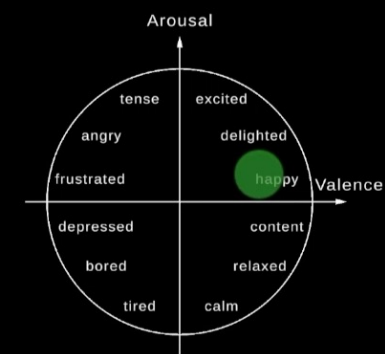


Sound Events

Speech: Yes
Music: No
Silence: No
Various events: Clapping

Music Elements

Mood: Anxious
Genre: Classical
Tempo: 150bpm
Key: C
Chords: Em
Singing voice: No
Instruments: Guitar, Cymbal



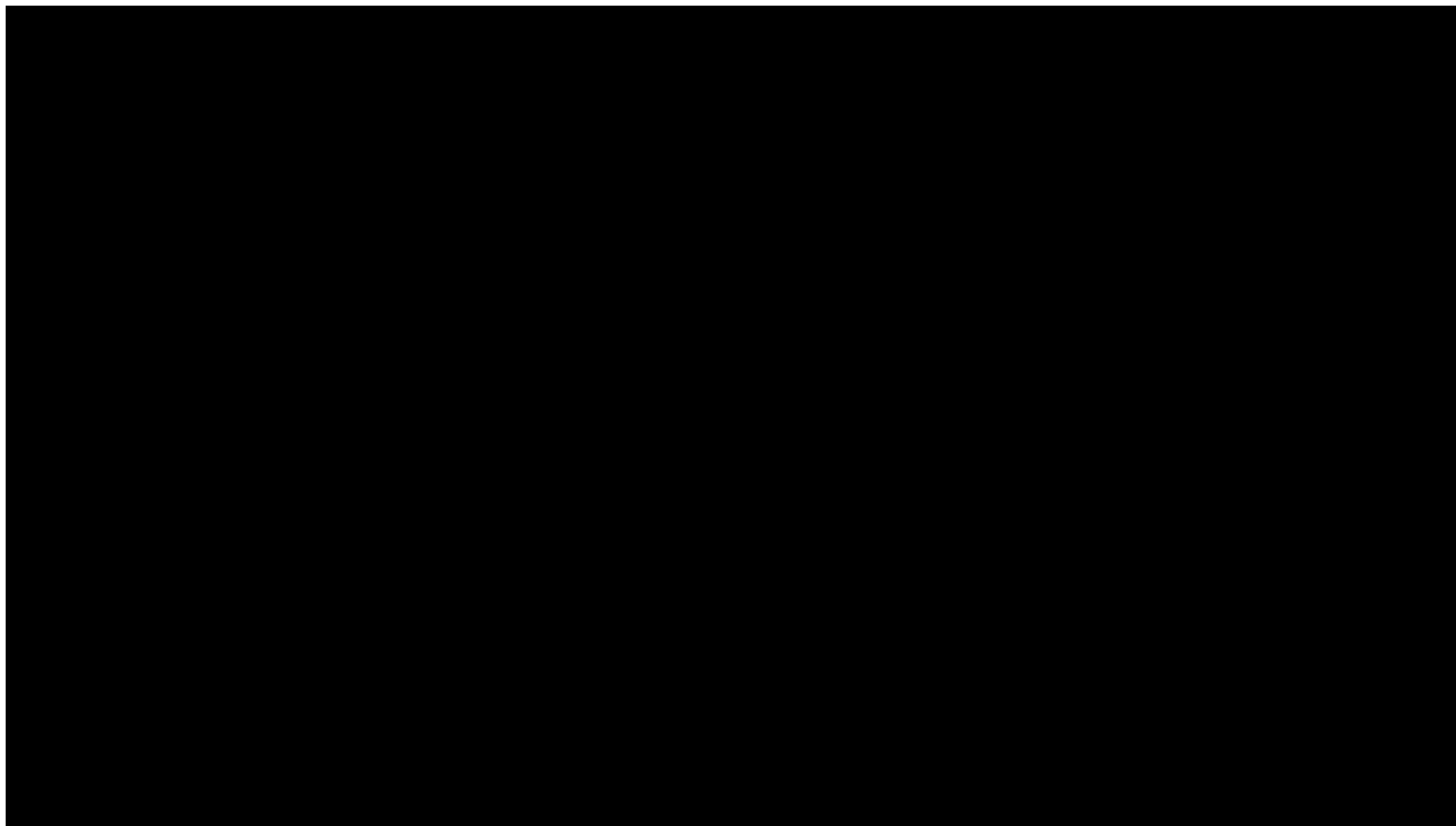
Volume:



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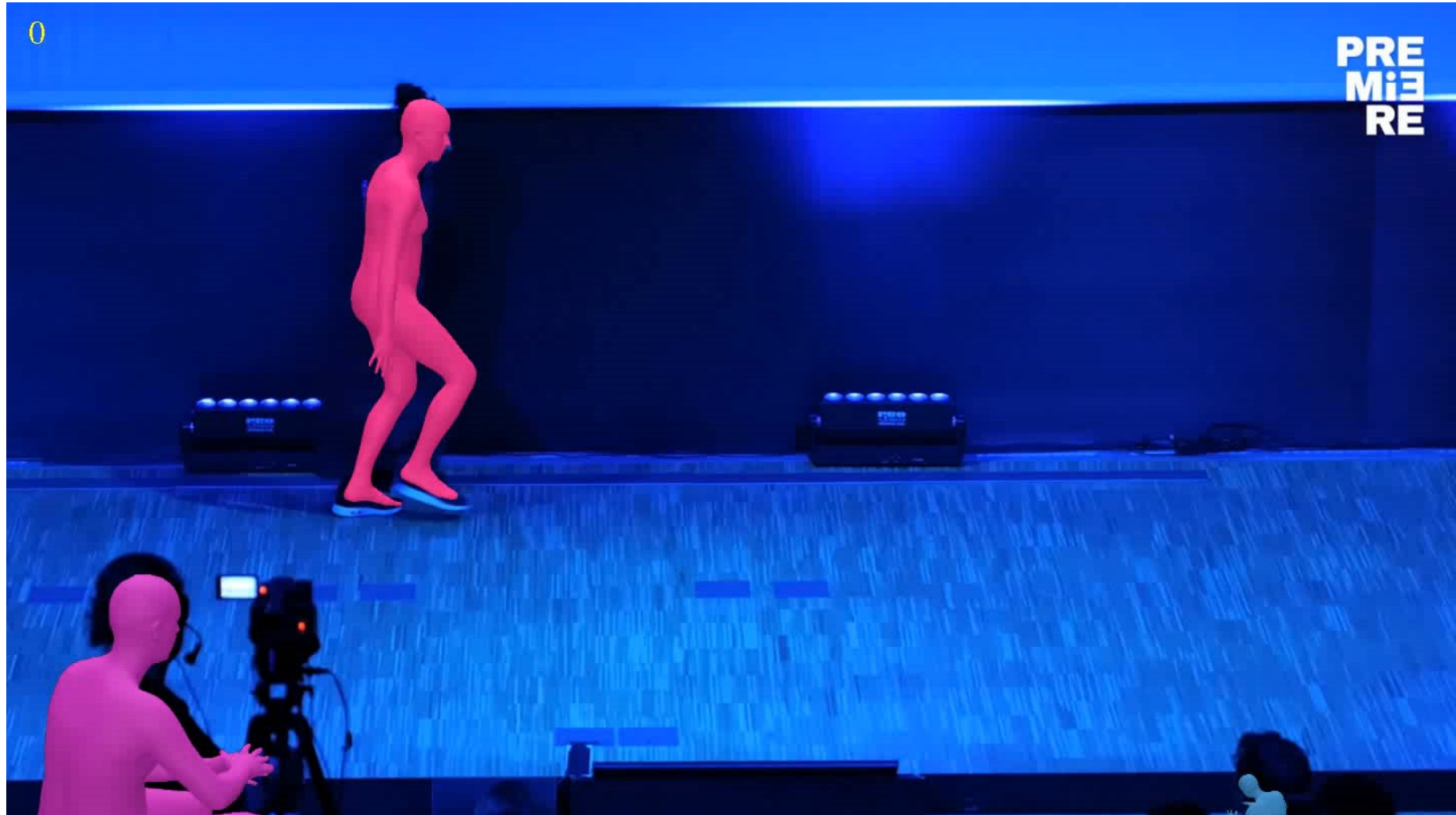
2D pose estimation



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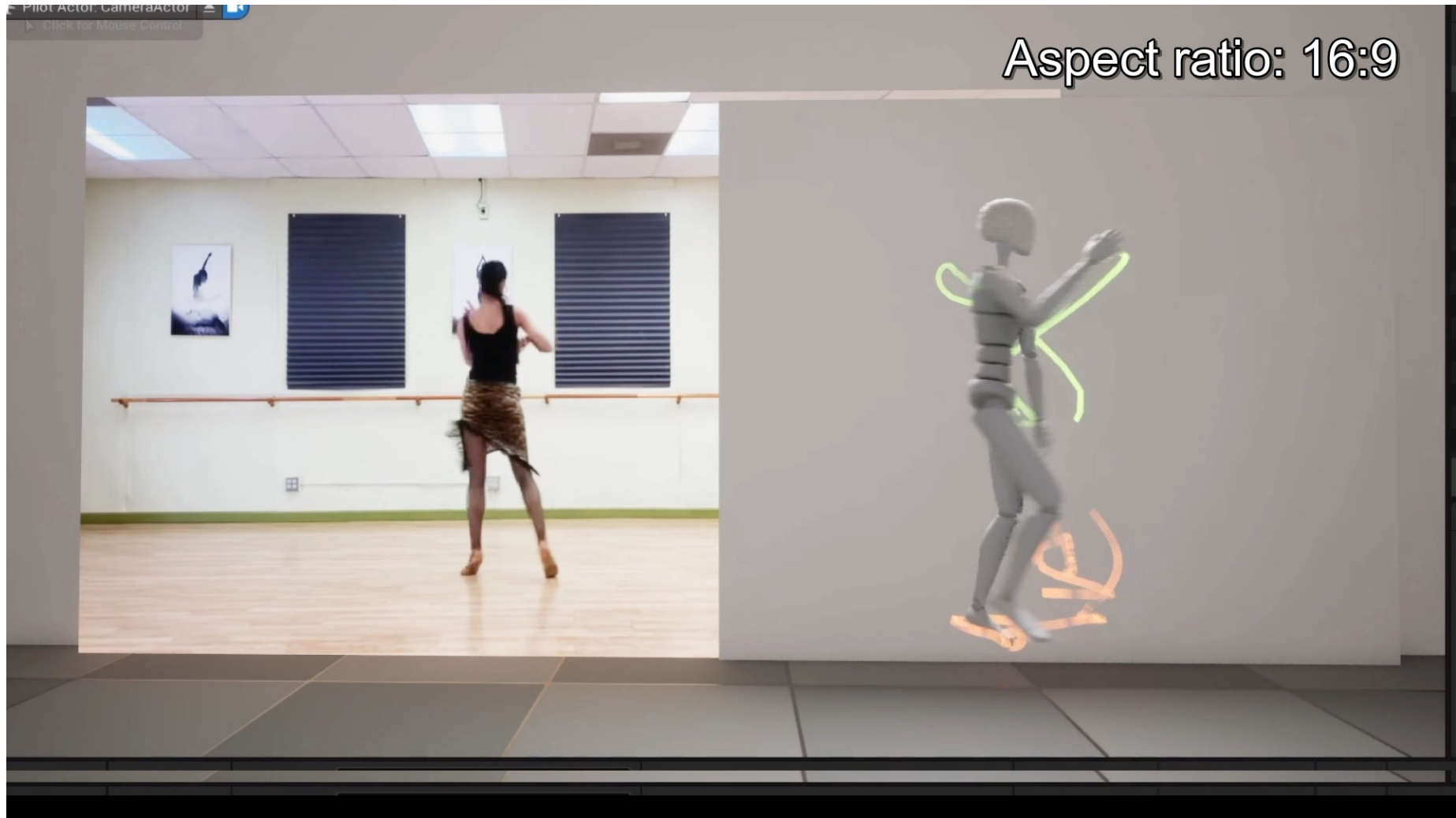
3D body tracking



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Motion trajectories



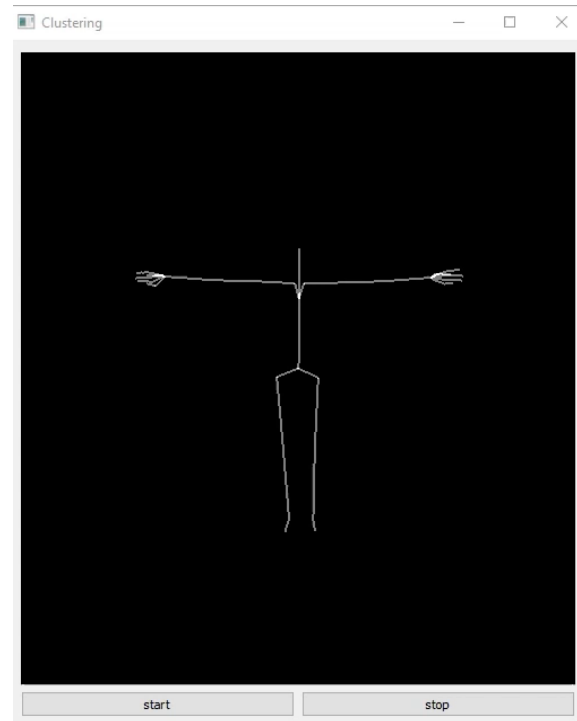
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Movement analysis

Movement Clustering

- Grouping of Short Movement Excerpts
- Grouping based on Similarity of Movements
- Movement Vocabulary Machine Perception of Movements
- Source Material for Choreographic Recomposition

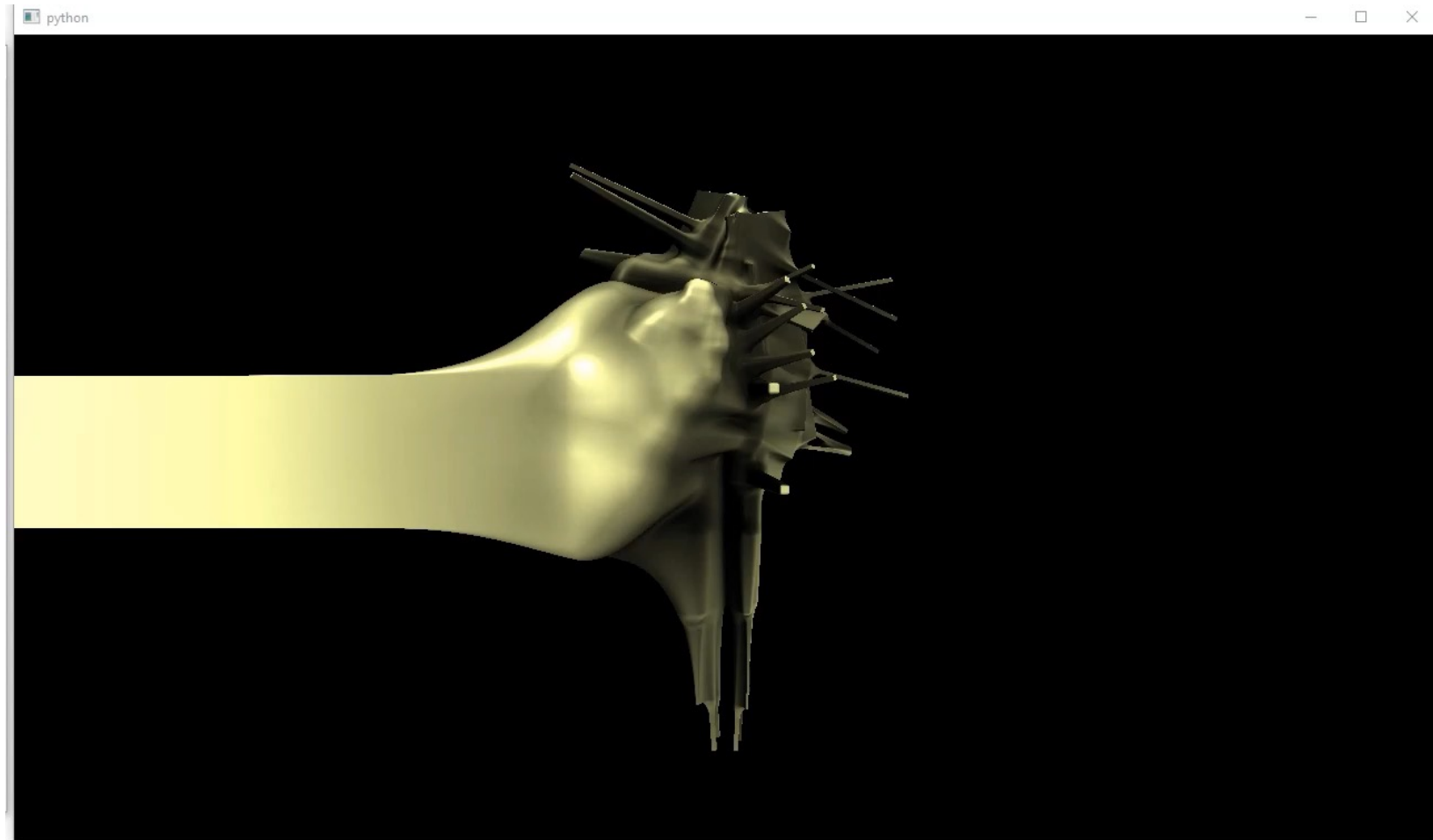


Movement Transformations

- Encoding and Decoding of Movement Sequences
- Concatenation and Blending of Successive Movements
- Manipulation of Movement Encodings



Translation of dance into synthetic images



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Translation of dance into synthetic audio



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PREMIERE project proposal



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Topic scope and expected outcomes



Funding & tender opportunities
Single Electronic Data Interchange Area (SEDIA)

EN

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HOMESEARCH FUNDING & TENDERS ▼HOW TO PARTICIPATE ▼PROJECTS & RESULTSWORK AS AN EXPERTSUPPORT ▼

2

Preserving and enhancing cultural heritage with advanced digital technologies

HORIZON-CL2-2021-HERITAGE-01-04

TopicCall for proposal

>

Internal navigation

ExpectedOutcome:

Projects should contribute to at least two of the following expected outcomes:

- Develop and strengthen the use of digital technologies to protect, preserve, restore and safeguard cultural heritage and the arts in complementarity to other research methods.
- Facilitate and widen access to cultural assets through digital and cutting-edge technologies and tools, in parallel or as an alternative to physical access to cultural heritage.
- Support comparative analysis with artificial intelligence, including analysis across time, and other digital means to improve innovation and knowledge exchange in the cultural and creative sectors.
- Increase the competitiveness of cultural and creative industries in the internal market and internationally, and provide opportunities for new and sustainable jobs creation.
- Explore the role of digital tools, such as 3D/4D simulations, virtual and augmented reality technologies in engaging with cultural heritage during and after the COVID-19 crisis.

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State the objectives and their relation to the work programme

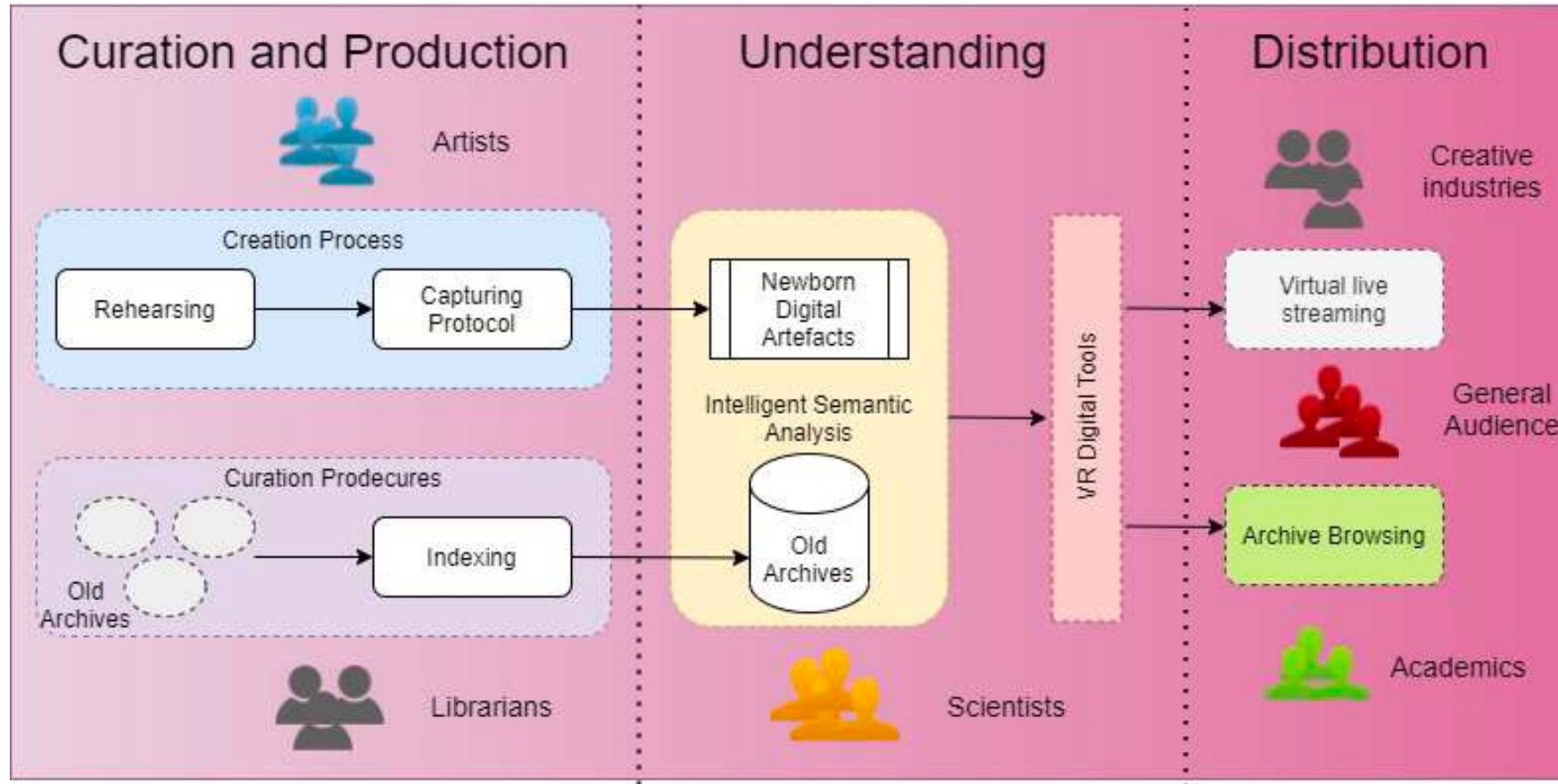
The overall objective of PREMIERE is to develop and validate a comprehensive ecosystem of digital applications, powered by leading edge AI, XR and 3D technologies, designed to fulfil the needs of diverse end-user communities involved in the main stages of the lifecycle of performing arts productions, including amateur and professional performers, performance art producers and curators, performance art spectators and scholars. To achieve this objective and the underlying general goals mentioned above, PREMIERE will pursue the following specific objectives:

Objective 1 (O1): To study social perceptions related to remote and digitally enhanced performances, elicit the end-user needs and translate them to requirements for PREMIERE's digital solutions.

Position technology ambition with Technology Readiness Levels

Technology	Start TRL	End TRL
Scene understanding and 3D reconstruction from video recordings	3	5
Live human motion capture	4	6
Audio and Language technologies	3	6
3D/XR live streaming of cultural events	3	5
Real-time remote rehearsing	4	6
Artistic creation using AI and XR tools	3	5

Present an overview that addresses most items in the topic description



Clear vision for the project

27th March 2025, in Europe

Coliseu Porto Ageas, Porto, Portugal



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Analyse topic-specific outcomes

Specific outcome [SO5]: *Develop and strengthen the use of digital technologies to protect, preserve, restore and safeguard cultural heritage and the arts in complementarity to other research methods.*

Social: Protection, safeguarding and preservation in the context of performing arts are identified as actions that will a) enrich existing content using digital tools (preservation) and b) create digital tools that enable the safe delivery of the newly born culture to the next generations (protection, safeguarding).

Scientific: PREMIERE will have a three-fold scientific impact in the context of digital preservation and protection. First, the use of digital technologies is strengthened by further developing algorithms and pushing the state-of-the-art in a series of scientific fields related to content processing such as computer vision and 3D scene analysis understanding, understanding and modelling human motion and its relation to the emotional state by fusing other modalities such as speech, efficient VR streaming technologies and audio scene analysis. Using open data practices wherever possible, new scientific datasets on multimodal content analysis and understanding (video, audio, text) will be provided and, when necessary, new tasks will be formulated, better matching real application needs that will emerge during the execution of the pilots. Second, new metadata will be created by exploiting the results of these digital tools on existing archives, which can facilitate scholar research, and thus extracting new knowledge from it. Third, performance capturing protocols will be designed that will allow to record newly created performances in a way easily understandable and exploitable by future generations.



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Complementarity of the consortium

The PREMIERE consortium comprises 12 partners, originating from 6 different countries (GR, CY, FR, ES, PT and NL) with variant profile, ranging from technology experts (ARC, UJM, CNS), industry partners (MED), creative industries (COL, ICK, FDA, FIT) and content owners (FDA, FIT) to art scholars (AHK), dance groups (ICK, STO), theatre groups (ARG, COL), education (AHK) and business partners (TMP).

THANK YOU FOR YOUR ATTENTION!

Follow us at <https://premiere-project.eu>



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Partners:



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Amsterdam University of the Arts

FORUM
DANÇA

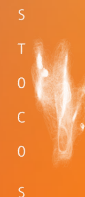


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