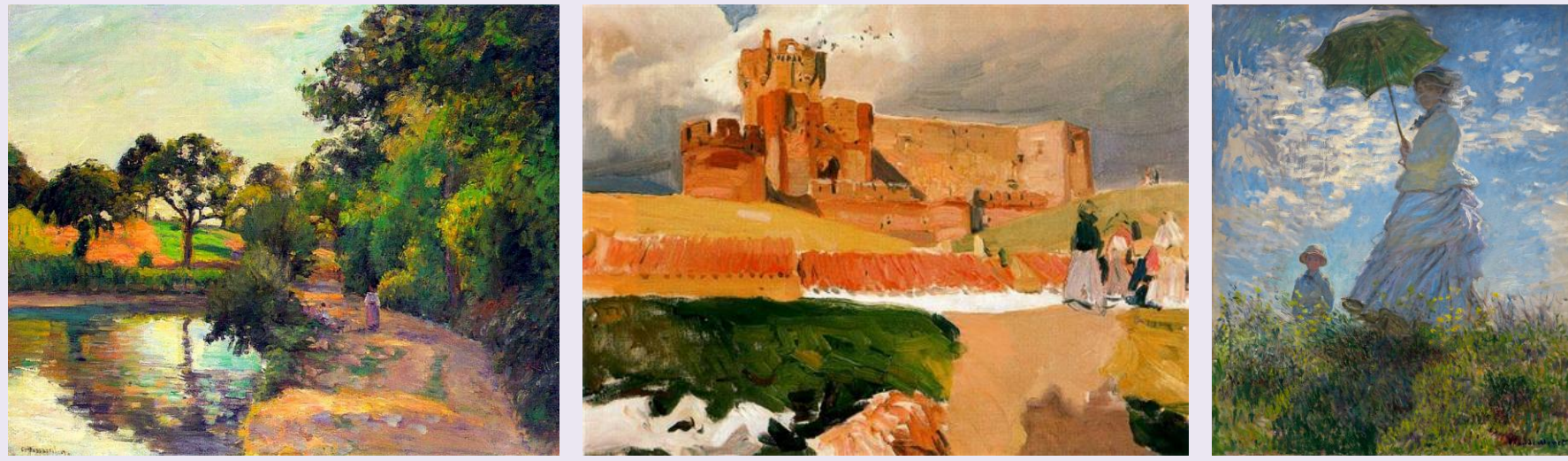


Rethinking museum exhibitions

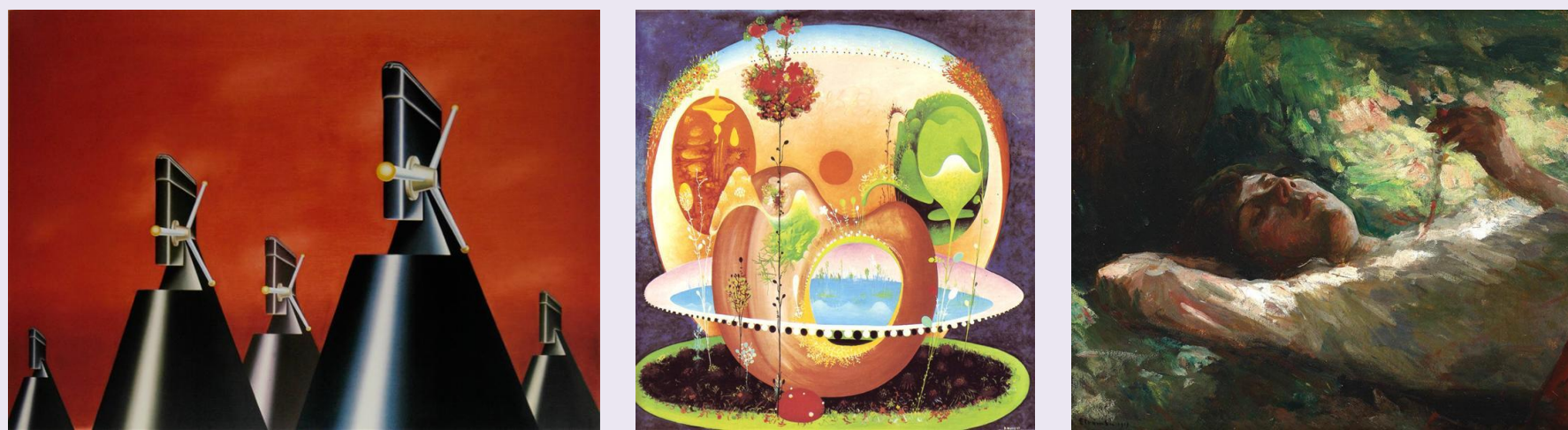
Museums typically design exhibitions based on historical periods, artists, art styles

Art style - Impressionism



A new exhibition paradigm is emerging: exhibitions based on emotions

Emotions – Fear, Surprise, Contentment

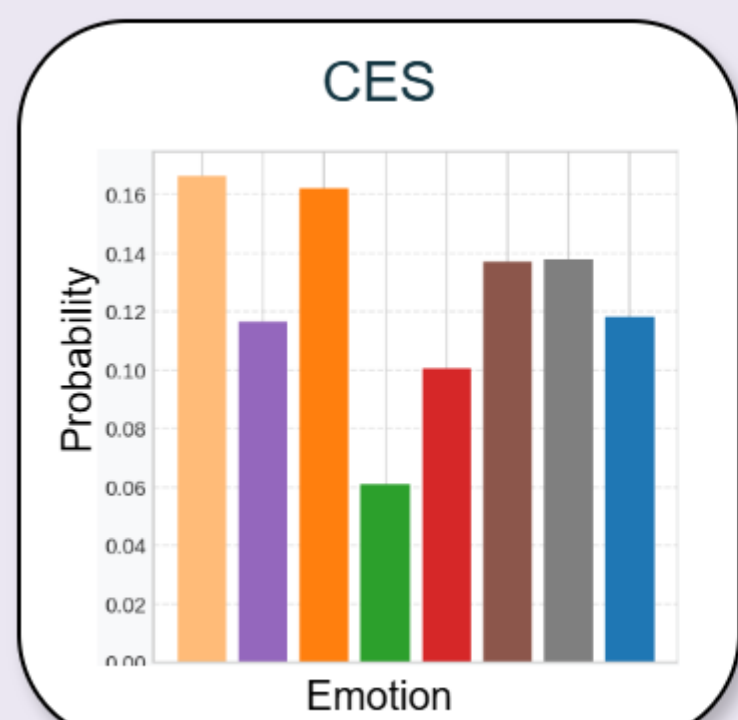


- Creates a universal experience
- Increases engagement with museums
- Democratizes art and culture

Existing emotion representations

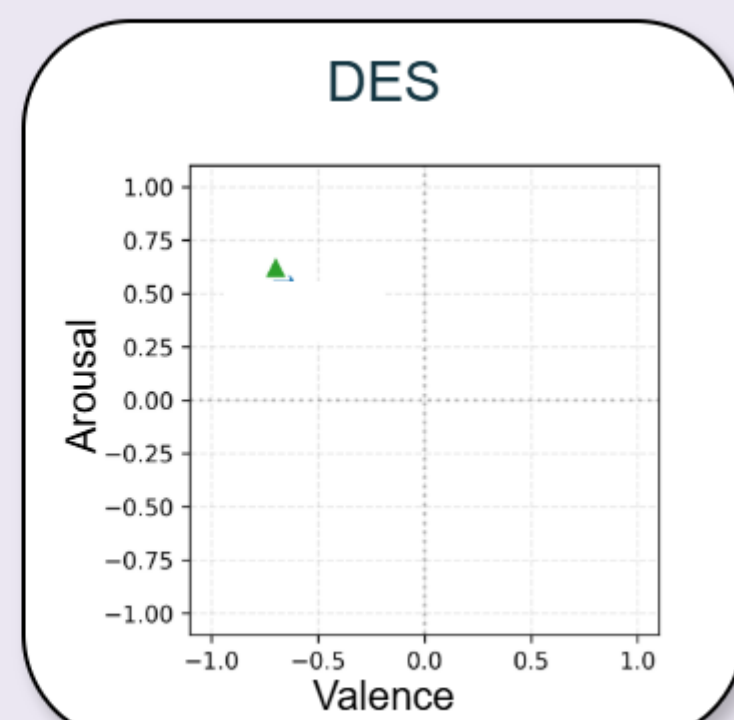
CES and DES representations can either express multiple emotions (nuance), or a wide range of emotions (flexibility)

Categorical Emotion Space



Nuanced ✓
Flexible ✗

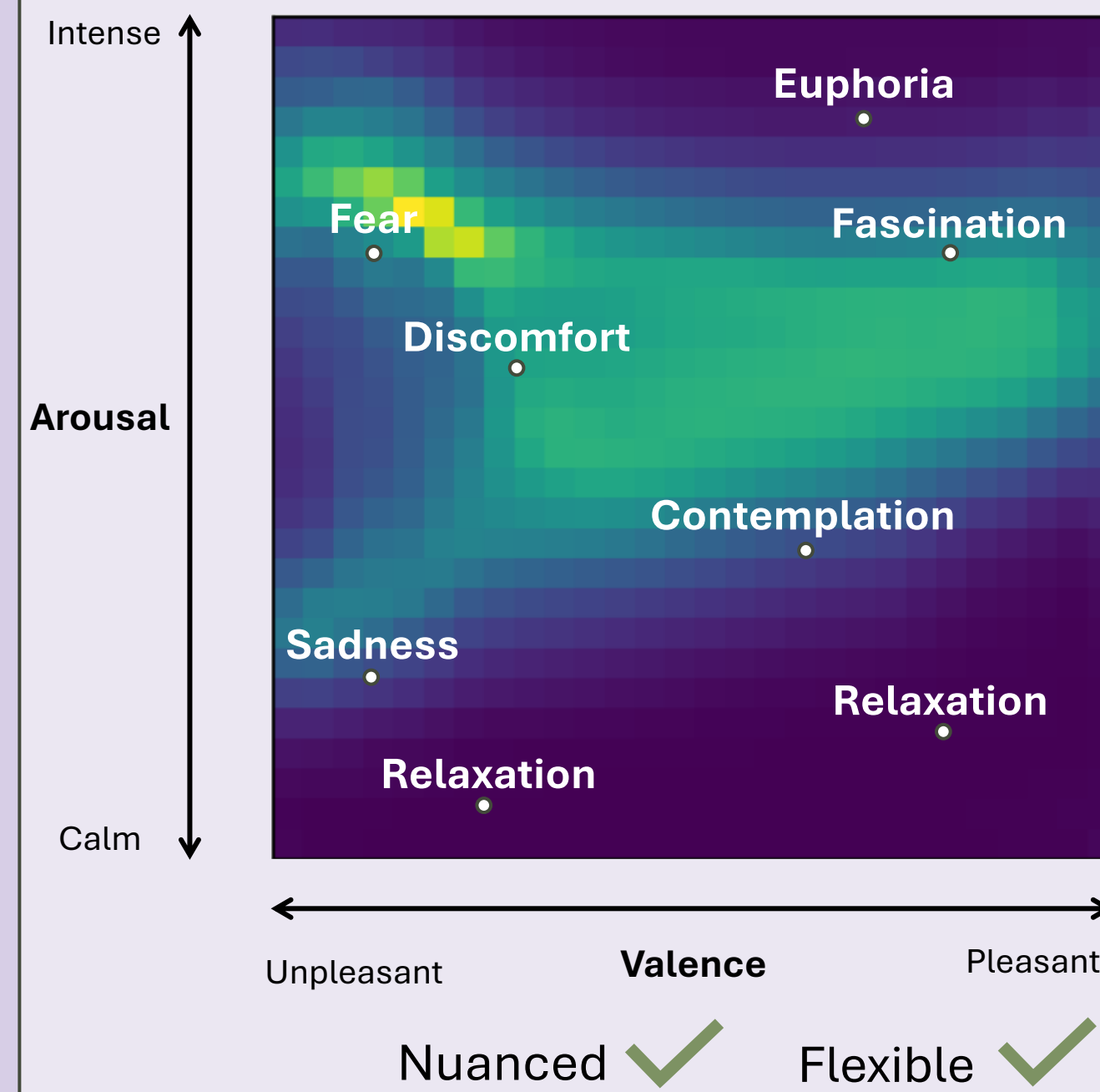
Dimensional Emotion Space



Nuanced ✗
Flexible ✓

DDES: A joint distribution in valence-arousal space

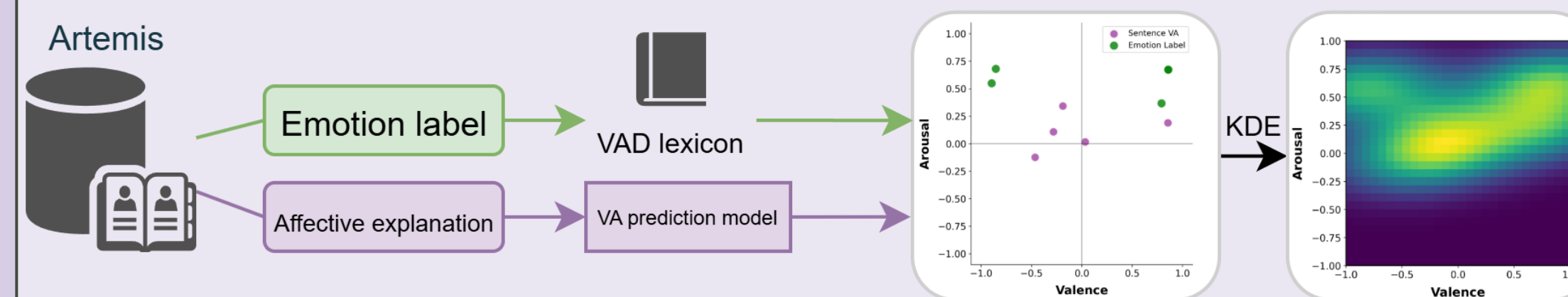
Bridging the gap between the different representations



- The valence-arousal model situates emotions numerically in bi-dimensional space
- The **Dimensional Distribution Emotion State (DDES)** addresses the limitations of existing **CES** and **DES** representations; it is both nuanced and flexible
- Provides a rich emotional portrait that can be interpreted quantitatively by curators, or qualitatively by visitors

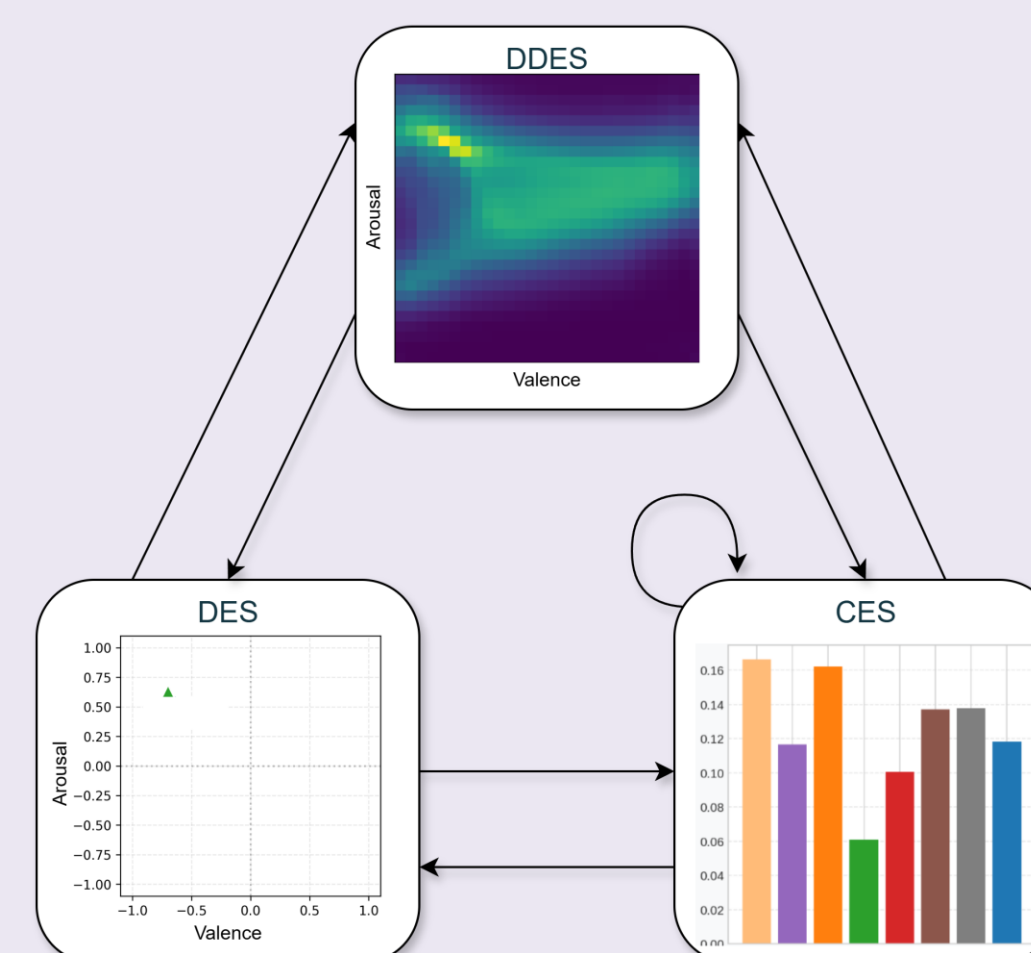
DDES construction pipeline

Aggregating the ArtEmis annotations through their valence-arousal coordinates



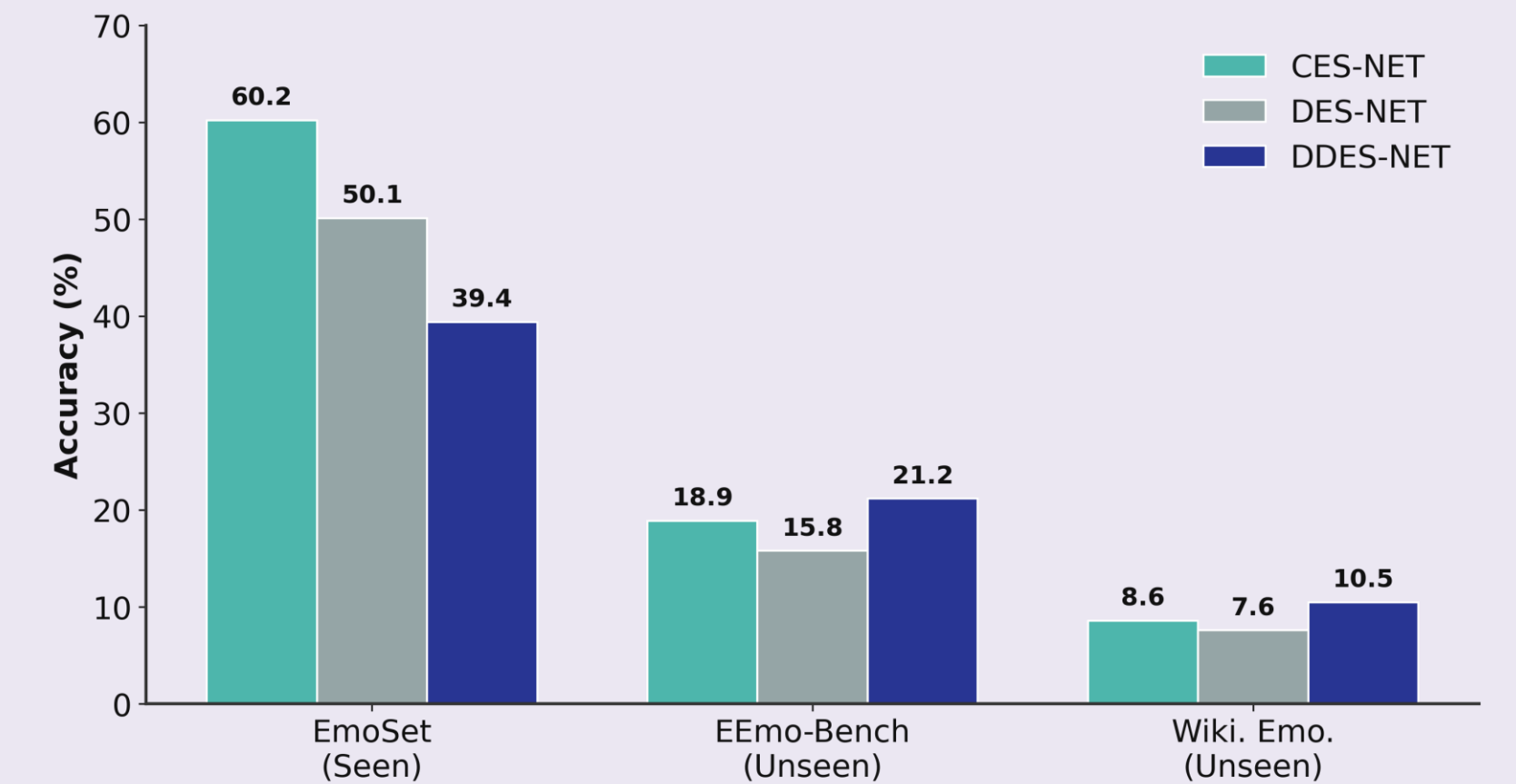
Representation conversion operations

The valence-arousal system provides a numerical basis for coherent conversion operations

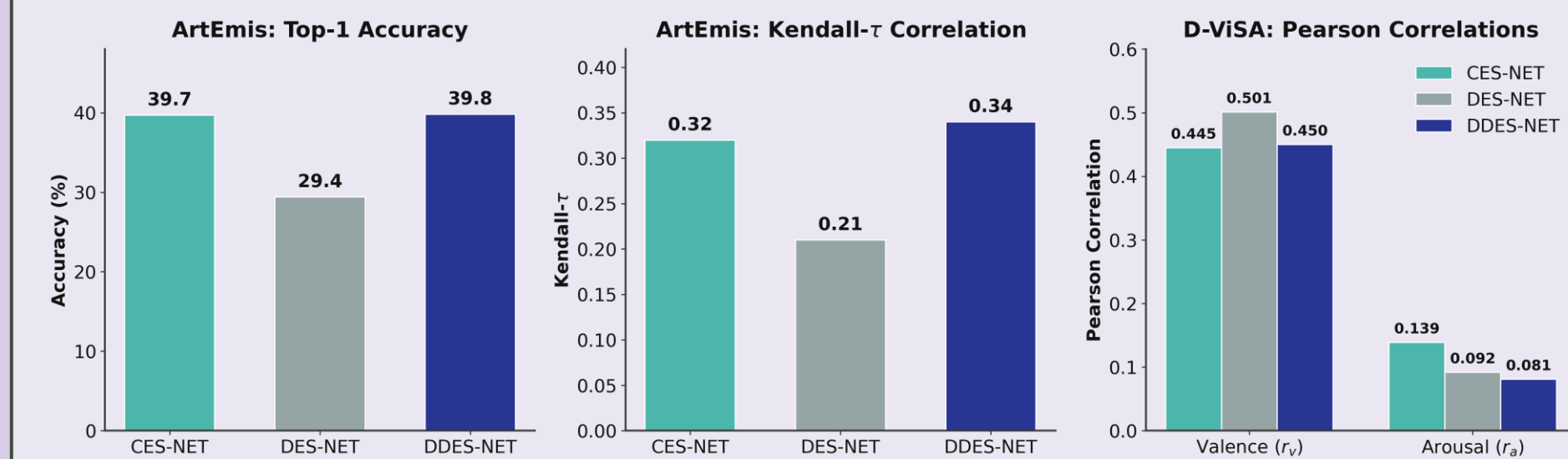


Results

Multi-Dataset Training - Generalization On Seen vs. Unseen Domains



Single Dataset Training - Base Performance on ArtEmis and D-VISA



Observations

- Models perform best when trained and evaluated on a single dataset with corresponding representations
- DDES-NET generalizes best to unseen datasets and representations
- The Valence-Arousal space can successfully be used to convert output representations

Example DDES analysis for practical use

