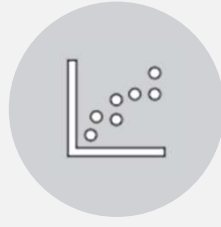
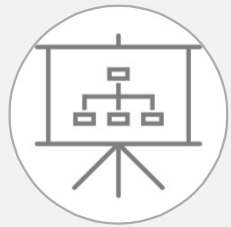


# “Can a Virtual Reality (VR) and Computer Vision (CV) approach effectively measure facade complexity, align with user perceptions, and inform user preferences for future construction trends?”



Computational Image Complexity Analysis (CICA)

3D Modeling and Façade variations Setup

Façade complexity score and data visualization

VR integration and Environment Setup

VR Simulation Tools

VR SYSTEM FOR FAÇADE ANALYSIS

## VR System



- Building interior and exterior inspection
- Façade variation selection, complexity score CICA registration
- Complexity Data visualization

## Experiment Execution

### 1) Quantitative



VR interaction complex facade



Screen based complexity ranking

### 2) Qualitative



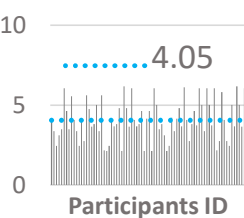
Post-interaction Survey stage

### Conditions:

- 1 Building, 3 façade patterns, 10 variations

## Data Analysis

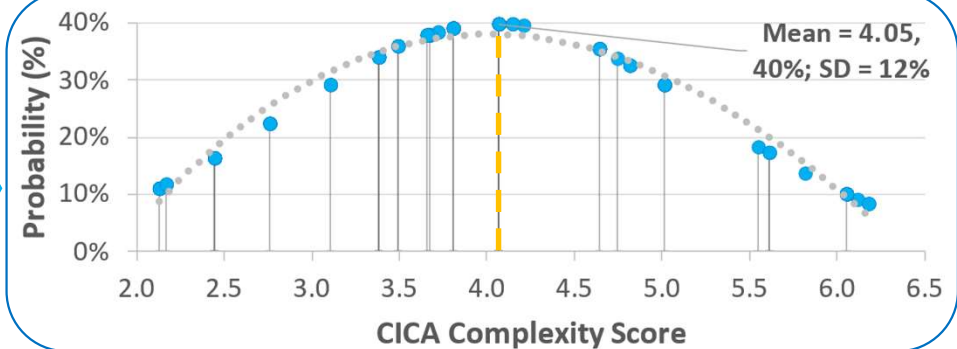
### 1) Complexity level



■ Complexity score of facade chosen  
..... Mean Complex. score

### 2) Survey analysis

- Participant Background
- Perception and parameters of complexity



## CONCLUSION:

Results reveal an average standard deviation of 9% between the system's complexity measurements and participants' perceptions, indicating a preference for moderate complexity. In the VR experiment, participants chose facade variations with an average complexity score of 4.05 (on a scale of 1 to 10) according to the CICA system. These findings align with the CICA analysis of architectural styles, affirming the trend towards contemporary architecture embracing complexity.

## Experiment Design