"What is the user response to complex facades created with digital fabrication, measured through virtual reality, and how does it inform future construction trends?"

Computational Image Complexity Analysis (CICA)

3D Modeling Façade variations

Façade complexity score and data visualization

Immersive Simulation

VR interface control

VR APP FOR FAÇADE ANALYSIS

VR Application

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

Experiment

1) Quantitative

VR interaction complex facade

Screen based complexity ranking

2) Qualitative

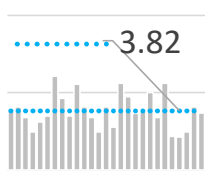
Post-interaction Survey stage

Conditions:

- 1 Building, 3 façade patterns, 10 variations

Stats. Analysis

1) Complexity level



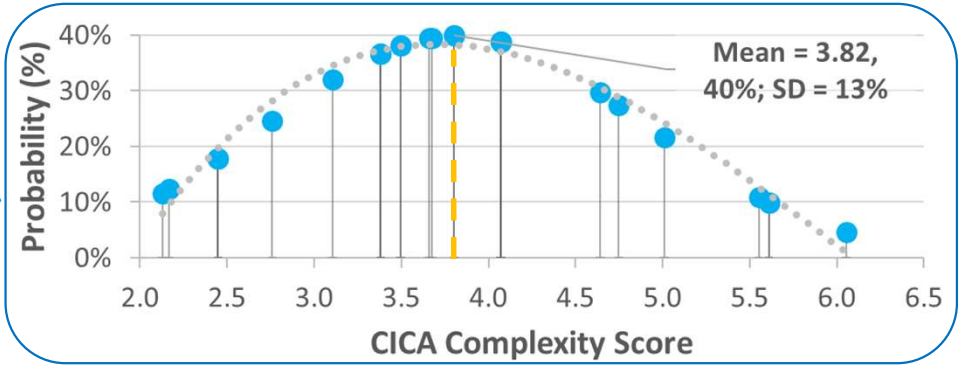
Complexity score of facade chosen

Mean Complex. score

2) Survey analysis

- Participant Background
- Perception and parameters of complexity

Experiment Design



CONCLUSION:

The Computational Image Complexity Analysis (CICA) applied to a data base of buildings uncovers a cyclical preference between complex and simple architectural styles, hinting at the emergence of a new era favoring complexity. In a VR experiment, participant choices facing façade variations, influenced by different degrees of complexity resulted in an average complexity score of 3.82 (on a scale of 1 to 10) by CICA. These findings align with the CICA analysis of architectural styles, affirming the trend towards contemporary architecture embracing complexity.