3.1. COMPLEXITY ANALYSIS SYSTEM DEVELOPMENT 3.1.2 COMPUTATIONAL IMAGE COMPLEXITY ANALYSIS (CICA) 3.1.3 VR **CICA PROCESS OUTPUT VR INTEGRATION** INPUT Export 3D models as fbx FACADE VARIATION (a) FACADE MODELING CALCULATE COMPLEXITY CICA SCORE **FOLDERS** (0) Input Image: Asign - Complexity score based on VIRTUAL SITE folder name for Building and terrain Import 3D models and edge density and contour identification ranking data. count Organize in Folders PATTERNS MODULE - Unity compile and Build - ID per name and folder P2 P3 **Process Images** 10 FACADE VARIATIONS Render Image of Were all images (1) Convert to grayscale, facade labeled by processed? variation number apply Gaussian Blur to Ranked facades reduce noise and pattern _Yes▶ (1 to 10) per pattern Render images as PNG P2 P3 P1 Calculate Metrics using Computer Vision(CV): Buildings per arch (2) Edge density (b) HISTORY ANALYSIS ARCH, STYLES style (3) Contour count ARCHITECTURAL **FOLDERS** Yes ID = score vear style c) 3D Virtual Exterior STYLES Complexity Score f1(x) Images of buildings Organize in Folders **Complexity Graph** Normalize metrics by architecural style. across STYLES: Building's Image - MOO optimization: sum - ID by year, name based on with year and per of product of the metrics - Organize per Style CICA score style times a weight value -No-CICA PROCESS using Computer Vision (CV) (0) Input Image d) 3D Virtual Interior (1) Grayscale, noise reduction (2) Edge detection (3) Contour Count OMPLEXITY ANALYSIS (a) 3D Modeled facades e) VR Interface (b) Historical Analysis