Kinetic Façade Design Using 3D Scanning to Convert Physical Models into Digital Models

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Abstract : In designing a kinetic façade, it is hard for the designer to make digital models due to its complex geometry with motion. This paper aims to present a methodology of converting a point cloud of a physical model into a single digital model with a certain topology and motion. The method uses a Microsoft Kinect sensor, and color markers were defined and applied to three paper folding-inspired designs. Although the resulted digital model cannot represent the whole folding range of the physical model, the method supports the designer to conduct a performance-oriented design process with the rough physical model in the reduced folding range.