

Modeling Nolan Engineering Building with Kinect

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Abstract: The goal of this project is to create a three-dimensional model of the interior and exterior of Nolan Engineering building using a Microsoft Kinect, the open-source software development kit (SDK) and drivers and custom software running on a PC to collect the input data, translate it into a interpolated 3D model, and stitch the individual pieces together to form a comprehensive model of the building. An application will be designed and written using the Point Cloud Library (PCL) and a suite of back-end open-source software including NICE, OpenNI, and MeshLab, to construct a real-time 3D model with the depth map provided by the Kinect sensors. The system for capturing the environment data will be composed of the Kinect sensor bar connected via USB to a PC running the modeling program. By carrying the Kinect that is attached to the PC around and inside the building, the program will smooth the data into a unified model using the Iterative Closest Point (ICP) algorithm. The end goal of the project is to create an accurate three-dimensional model of Nolan Engineering with the Kinect.

Keywords: Kinect, 3D modeling, open-source, algorithms

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