Project Pointless

Identifying, visualizing and pathfinding through empty space in interior point clouds using an octree approach

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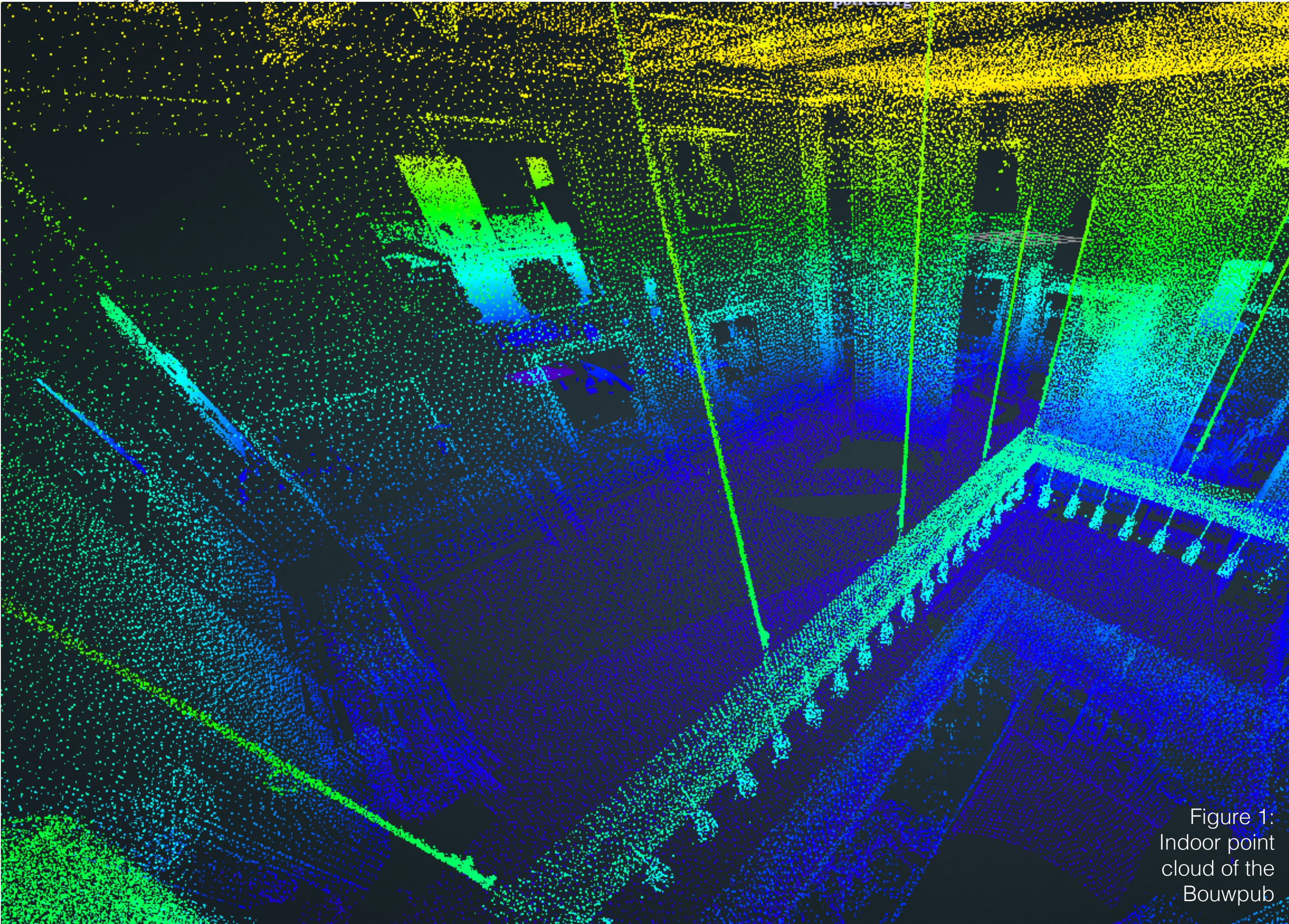

Figure 1: Indoor point cloud of the Bouwpub

Project Pointless is part of the Geomatics Synthesis Project of TU Delft. It creates a smart workflow which efficiently identifies the empty space in a point cloud. It stores this in an efficient way and visualizes it as well. The empty space as well as the points are structured in an octree. This allows to successfully apply a pathfinding algorithm in the point cloud without crossing walls and other objects. The results of the performance and scabality tests indicate that the octree implementation is efficient and scalable.

The Octree

The raw point cloud data is stored into an octree data structure. The figure on the right side visualizes the point cloud and the empty boxes.
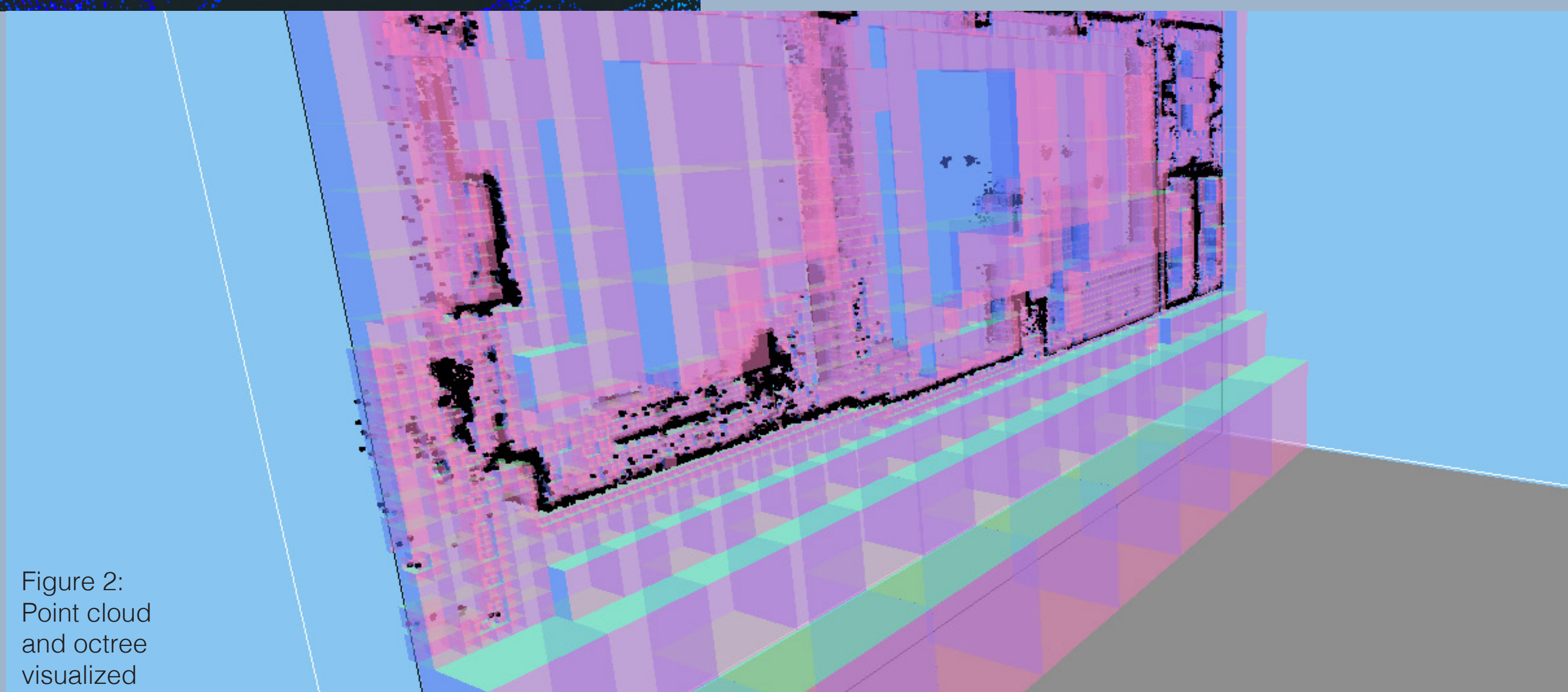

Figure 2: Point cloud and octree visualized

Pathfinding

To find a route, the A* algorithm is used. It looks up all neighbouring empty boxes of the current location and uses this to calculate the shortest path to the destination. The image on the right shows the result of such a path.
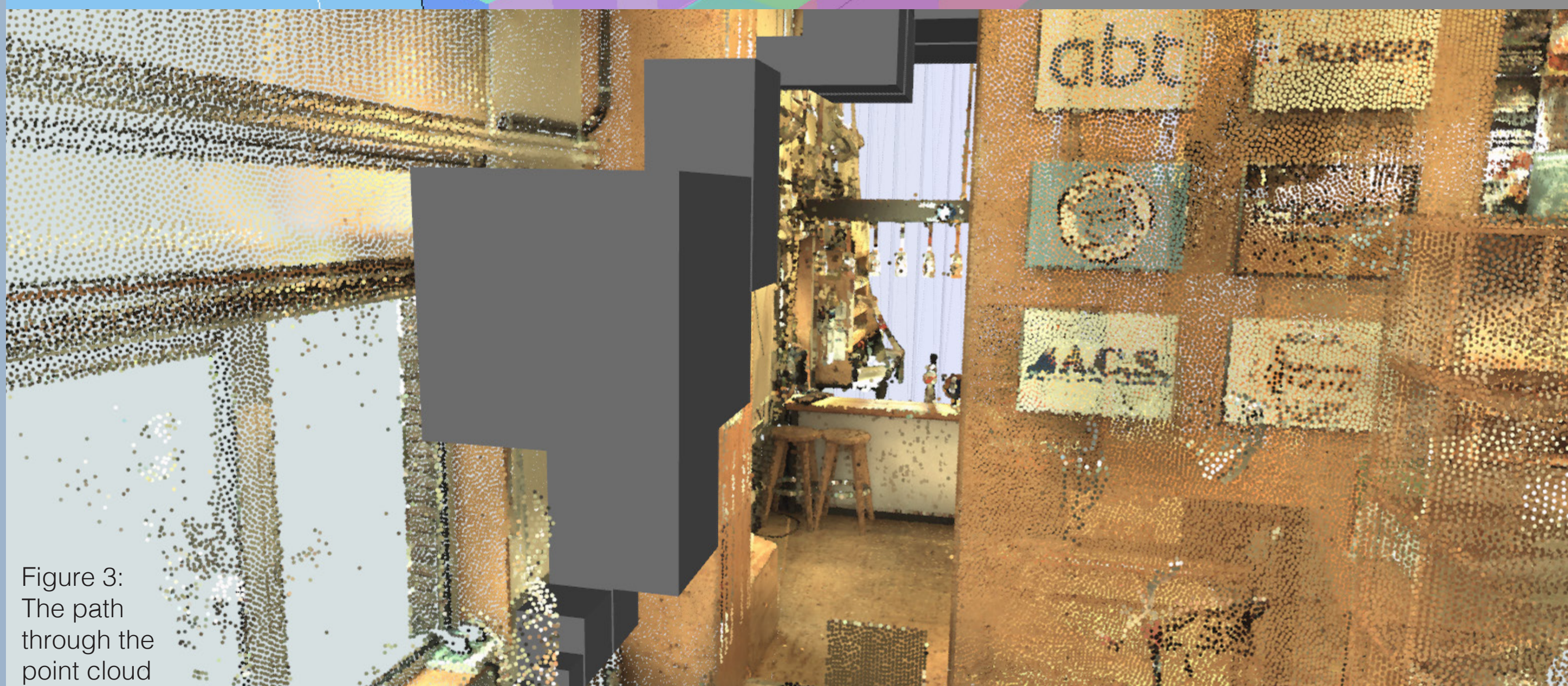

Figure 3: The path through the point cloud

Geomatics Synthesis Project

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