Use Cases

1. Further Development of Room Planer Apps

Room Planer Applications are a way of virtually testing the arrangement of different furniture. In these apps (like the “IKEA Roomplaner”), the user makes several smartphone photos from which a 3D Model of the room is created. Inside the virtual room, models of different furniture (for example from the IKEA catalogue) can be placed, to test the look and practicability of the arrangement.   
Using point clouds and image segmentation, it’s possible to further develop these applications to “cut out” the furniture that’s already set in the real-world version of the room. In this way, the user could start with an empty room to try out different pieces of furniture and decorations.

1. Gaming

A user could make a LiDAR Scan of an environment of their choice (e.g. the own living room) and then, using point cloud data format, transform this scan in a map for video games. In a first step, one could define “playable areas” in the scan, and use it for virtual motor races in an environment that looks like the own home. In a second step one could use image segmentation to define different things in the environment’s point cloud (like a plant, a couch or a table) as separate virtual objects. These objects could then be used as interactable things in maps for platform games (like Supermario). In this way, the player could interact with a model of their own fridge to fill his ingame character’s life energy or interact with their own wardrobe to change the character’s outfit.

1. Security

Using LiDAR one can make scans of the rooms and corridors of big buildings, including their windows, doors and staircases. Using 3D models of the point clouds one can run different training simulations to find the best emergency route from each place inside the building. These trainings could also include sensor data from thermometers of humidity/light sensors to also involve environmental circumstances in the calculations. Furthermore, using point cloud segmentation, things on the corridors, like chairs, plants, printers, etc. could be marked as moveable items. In different simulations one could find the best place to put these items, so that they are still accessible to serve their purpose, but don’t interfere with people leaving the building in the case of an emergency.

1. Navigation for blind people

Blind individuals can enhance their navigation by gaining awareness of their surroundings by using Lidar scanning. Instead of using traditional methods like canes that heavily rely on tactile feedback and can sometimes be imprecise, LiDAR scanner assists them in identifying and measuring the distance to objects including locating features like doors. Real-Time Mapping and combination with other sensor such as audio sensor also help them to navigate their surroundings more efficiently and safely. A danger alert can also be implemented so that they could prevent themselve from involve in any accident.

1. Environmental Study:

Ecologists can analyze natural landscapes, segmenting trees, rocks, or other features.

1. Robotics and Navigation:

For robots equipped with LIDAR or 3D scanning tools, the tool can help in segmenting and identifying obstacles or points of interest.

1. Escape Room Design:

Designers of escape rooms or immersive theater experiences can use the clustering to design challenges or scenes based on actual spatial data.

1. Interactive Learning Environments:

Teachers can create interactive 3D environments for subjects like history, geography, or science. Students can explore these spaces, with each cluster representing a learning module or interactive lesson.