RecolorCloud: A Point Cloud Recoloring and Segmentation Tool

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Supporting Project: **[LINK]**

Grant Number:

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Introduction

RecolorCloud is a point cloud recoloring tool used for re-coloring, semantically recoloring, segmentation, and conversion of point clouds. RecolorCloud works by utilizing algorithms written specifically for recoloring points based on simple recoloring techniques. These algorithms allow the tool to recolor and semantically recolor based on selected options.

The tool was created to be a simple tool that works alongside a third-party tool called LabelCloud to create bounding boxes on a point cloud. This tool combines the output from LabelCloud, a point cloud, and a coloration file to produce a final output point cloud.

Features and Functionality

- Recoloring to correct outlier points inside a bounding box
- Solid recoloring a point cloud to semantically recolor the points inside a bounding box
- Fragment a point cloud as defined by a LabelCloud bounding box
- Convert a point cloud into one of the supported file types
- Handle large scale point clouds (>600 million points)
- Functional UI for python interfacing

Quickstart and Installation

1. Download the repository at [LINK]
2. Install or Launch Conda and create a new environment using the requirements.txt file provided.
3. Unpack ReColorCloud source code.
4. Launch your Conda environment.
    a. You can open the project in VS code or on a Conda console window.
    b. > `python main.py`

LabelCloud usage Instructions

Users should be able to load a point cloud into label cloud by following labelCloud's instructions on the repository. Users should only need to use the following command to install labelCloud:

- `pip install labelcloud`
- `Labelcloud` or `python labelcloud`

Labelcloud is limited to in its performance capabilities for visualizing large point clouds so it is recommended to *downsample* a point cloud using RecolorCloud (Preferably to one with a file size less than 1GB from our trials) and load it into LabelCloud.

Extended User Guide and How-To

This section will discuss the inner workings of RecolorCloud, how does it work, and how to best use it towards a project.

Closing Notes

Thank you for the opportunity to use our application. The following are involved with this project:

- Esteban Segarra Martinez (Primary Developer)
- Mykola Maslych (Paper editor and writer)
- Ryan McMahan (Project guidance, paper editor)