

User Manual for UI - Generating Part Annotations for 3D Point Clouds

1 Introduction

The User Interface (UI) for the "Generating Part Annotations for 3D Point Clouds" tool allows users to label point clouds by loading two 3D point clouds: a source point cloud to be labeled and a template point cloud representing a sub-portion or part of the source. This manual provides instructions on how to use the UI effectively.

2 Instructions

2.1 Loading Source Point Clouds

To begin, follow these steps:

1. Load the Source 3D Point Cloud:
 - Click on the "Load Source Point Cloud" button to load a .ply format point cloud.
 - The name of the point cloud file loaded will be displayed below.

2.2 Load the Template Point Cloud & Label

1. Load the Template 3D Point Cloud if already exists :
 - Load a pre-existing template:
 - Click the "Load" button.
 - Click on the "Load Template Point Cloud" button to load the template.
 - Enter the label name for the part in the text box.
 - Pick a color that represents the label by clicking on the "Pick the color" button.
 - Click on the "Submit to label" button to match the templates in the source and obtain a labeled point cloud.

2.3 Crop the Template Point Cloud

If a template is not already available, follow these steps to crop a template from the source point cloud:

1. Pick a Bounding Box:
 - Click 'Crop' button

- Click on the "Pick a bounding box" button.
 - Move the bounding box along the positive X and negative X axes using 'X+' and 'X-' button respectively. Follow the same for Y and Z axes using the respective buttons.
 - Increase or decrease the dimensions of the bounding box using the "+" and "-" buttons for length, width, and height.
 - Once the bounding box encloses the desired template, click on the "Crop" button to extract the template from the source point cloud.
2. TOGGLE BUTTON : Clicking on 'TOGGLE' button will toggle the display of pointcloud between unlabelled 3D points and labelled 3D points of pointcloud. It makes the cropping process easy.
 3. Save the Template (optional):
 - Click on the "Save" button to save the template for future reference.
 - Enter the template name in .ply format in the adjacent text box.
 4. Labeling and Annotation of Cropped Template:
 - Estimated Template Repetitions:
 - Select an option from the "Est. Template Repetitions" drop-down box.
 - Choose "1" if there are no repetitions and you only want to color and label the selected crop.
 - Select "> 1" if you want to label all repetitions of the template.
 - Enter the Part Label:
 - Enter the desired label name in the text box provided.
 - Pick a Color:
 - Click on the "Pick the color" button to select a color that represents the chosen label.
 - Submit:
 - Click on the "Submit" button to match all the templates in the source and obtain

3 Reloading and Saving

- Reloading for Labeling Another Part:
 - To label another part of the already labeled point cloud, click on the "Reload to label" button at the bottom right end.
 - The labeled point cloud will load as the new source point cloud, and you can continue the process further by loading or cropping the template as stated in the above steps..

- Saving the Labeled Point Cloud:
 - On the right side of the UI, enter a name for the labeled point cloud in .ply format in the text box.
 - Click on the "Save labeled point cloud" button to save the labeled point cloud.

4 Label Details

All label details, including their names and colored representations, can be viewed in the "LABELS" section at the bottom left of the UI.