11th VR Summer Workshop
July 7th - 10th, 2020
ONLINE Remote
FORUM 8
the colors of point-cloud

Tools to manage and alter the colors of point-cloud data within UC-Win/Road

DONGSOO CHOI
The point cloud data show the complex shapes in detail. The point cloud data is useful for intermediate analysis and visualization within workflows, as they are relatively fast and contain attributes that model continuous data, such as elevation and distance.
This added tool is the effort to enhance UC-win/Road's ability to integrate the point cloud better. Also, make it more compelling tools that are not possible in other software.
Sample point cloud data shown with the dense points
typical point cloud
with(out) color data
Point Cloud data without color info but with intensity/ (.pts file)

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<th>z</th>
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data with intensity

data with intensity and shading

data without intensity but with shading
data with intensity

data without intensity
data with intensity

data with intensity and shading

data without intensity but with shading
data with shading
data without intensity nor shading
Point Cloud data with color info but without intensity/scaler (.las file)

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data with rgb

data with rgb and shading

data without rgb but with shading

data without rgb nor shading
Closeup view of data without rgb nor shading
current UC-win/Road view of point cloud
Look at the empty space for all the options we can implement
The only way you can manipulate the color is to reprocess each point cloud and save it out manually. And reimport into UC-win/Road. Not only time-consuming but also error-prone.
It will be useful to highlight the area of interest in the point cloud by changing the existing or adding new color to the data set. This can be done via selecting the plane(s) in XYZ or boosting the existing color set to a more prominent color. Just like we are using a highlighter when reading a report.
Feature Set

- RGB and Intensity toggle
- Point cloud XYZ plane selection with distance option, either all the same color or color fades based on the point cloud's distance.
- Point cloud selection, like Photoshop’s Lasso tool
- RGB slider or RGB color picker

- Maybe similar to new customizable shaders option but applies to Point Cloud
view of point cloud using new feature set inside UC-win/Road
Imported point cloud data
colorized normal
edge detection
Imported point cloud data
colorized normal
edge detection
Projected Goal

Gradually building up the point cloud data size and complexity of the visual structure to use the new feature set.

Working with Forum8 to implement the point cloud selection tools and changing the existing colors in the point cloud.

Creating or utilizing the existing point cloud to data to test the robustness pithing the UC-win/Road (no crash!)