Generation Of Training Data For 3D-Point Cloud Classification By CNN

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Point clouds cause problems!

Point clouds
- are large
- are unstructured
- contain different objects
- have errors
- have overlapping objects
- have gaps
- differ in density

- and the grouping of the points to sense classes is time- and labor-intensive.
Are there any solutions?

Yes!

- Improved tools for manual segmentation.
- Automatic tools for special questions.

Still very labor-intensive.

Let’s a computer do the segmentation and classification on its own!

Using **Deep learning**:

VoxNet, PointNet, Semantic3D.Net, PIXOR, ...

Hard to find a fitting CNN architecture

Large mount of training data
Address the problem training data to PCCT

- 3D point cloud to segment image
- Web tool for image classification
- Create classified 3D point cloud

Database
- Up to 95% of the points are correctly classified.
- Homogeneous and larger objects are easier to classify than smaller and filigree objects.
- Close objects are better classified as far objects.
- Color value is still of major importance for classification.
Conclusion and Outlook

• Reliable point clouds are a significant element for CNN-based classification techniques.

• PCCT is efficient and easy to use.

• Extensions in segmentation and projection are necessary (and implied).

• With PCCT generated point clouds are tested with simple CNNs.
Thank you for your attention!

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https://github.com/eb17/PCCT