PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation

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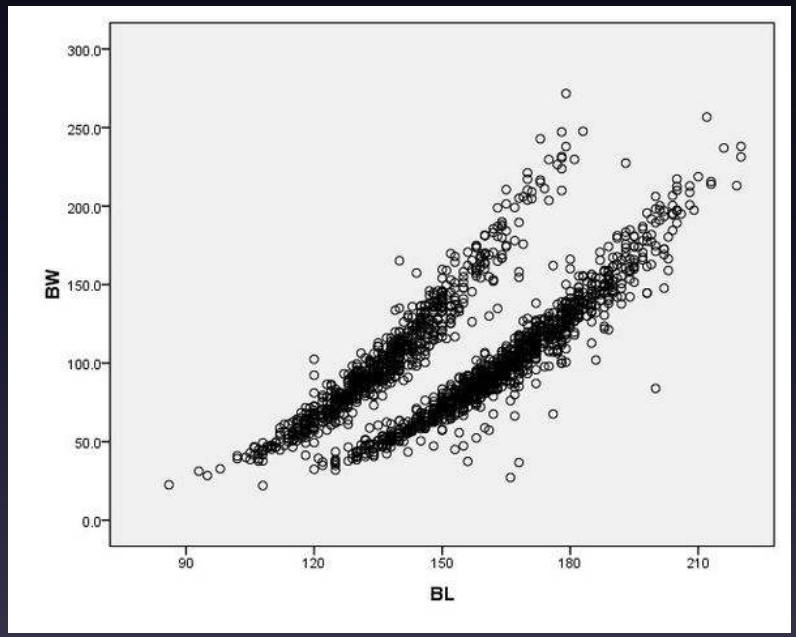
December 19, 2017

Content

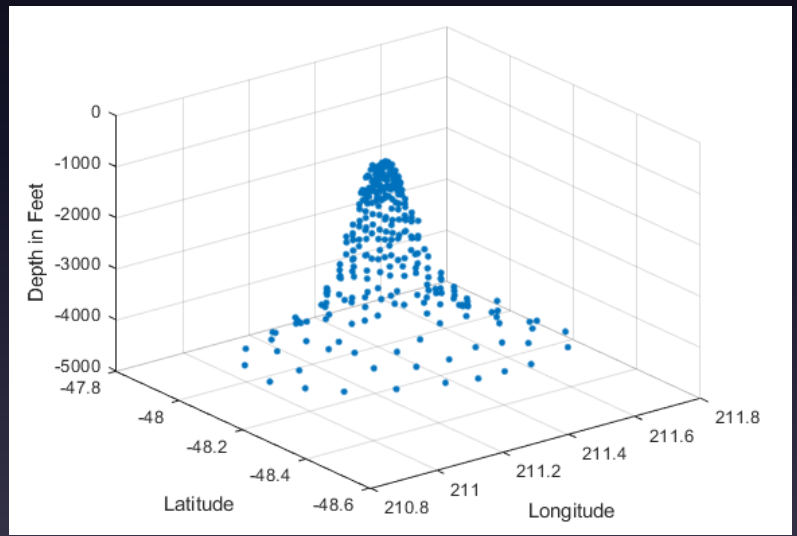
- Introduction
- Problem Statement
- Deep Learning on Point Sets
- Experiment
- Conclusion

Introduction

- Point Set



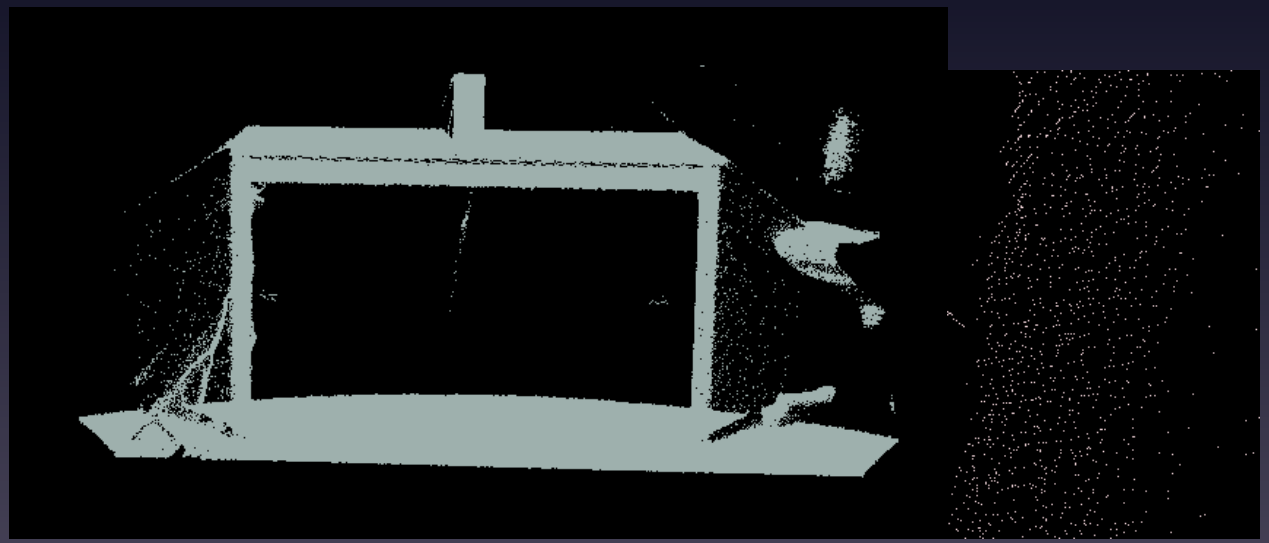
(a) 2D Point Set



(b) 3D Point Set (Point Cloud)

Traditional Point Cloud Processing

- Edge-based methods
- Model-based methods
- Region-based methods
- Attributes-based methods
- Graph-based methods

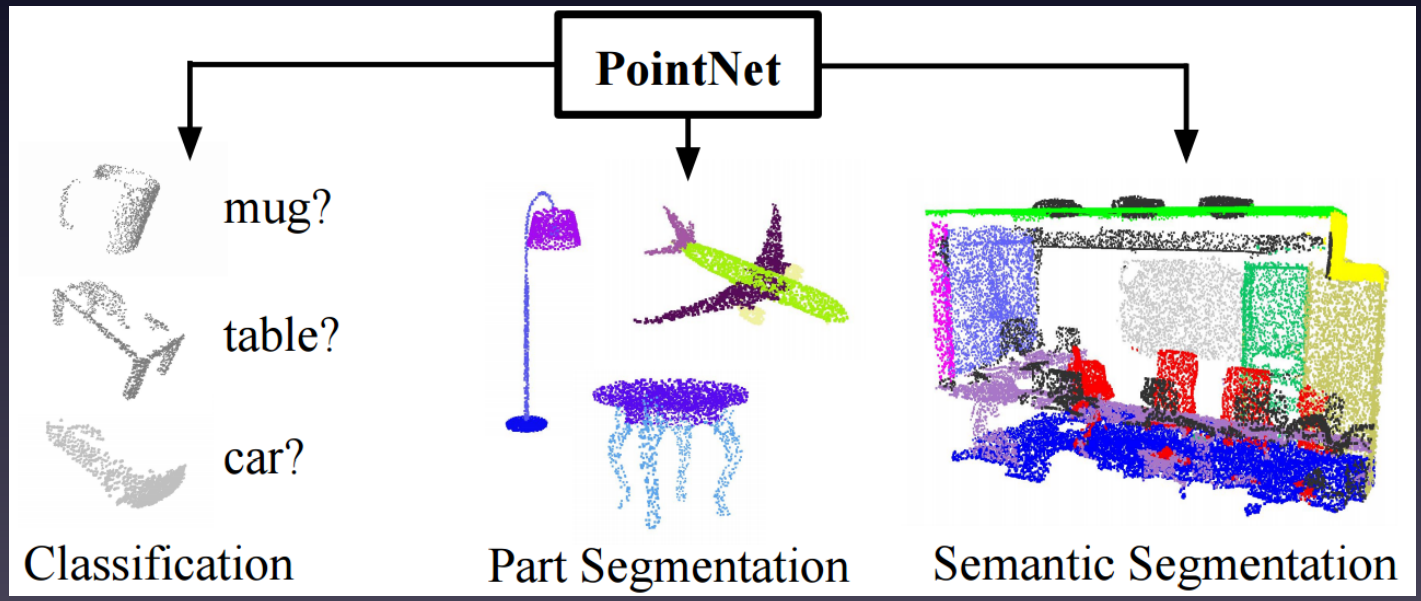


Neural Network Based Methods

- Volumetric CNNs: 3D voxel grids
  - Constrained by resolution
- Multi-view CNNs: collections of images
  - Nontrivial to extend them to scene understanding or other 3D tasks.

PointNet

- A novel deep net architecture
- Input: point set
- Tasks: 3D shape classification, shape part segmentation, and scene semantic parsing
- Simple, effective and robust



Problem Statement

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Deep Learning on Point Sets

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Experiments

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Conclusion

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