Learning to Construct 3D Building Wireframes from 3D Line Clouds

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1. Introduction

Why Wireframe?
- **Lightweight** for storage and processing
- **Clean** geometry representation
- **High-level** **structured** features

2. Contributions

- A novel **learning-based** solution to reconstruct **3D building wireframe** from Multiview images
- **LC2WF**: a **transformer-based** and **first** network to process line clouds based on line patches
- An adapted synthetic **dataset** with annotated multi-view images and ground-truth **3D wireframe models**

3. Line Patches

- Line patch: a group of line segments that encode local geometry
- Sample points w.r.t **density** and **farthest point sampling**
- Sample **line patch** based on distance between the sampled point and line segments

4. Methodology - LC2WF: line cloud $\rightarrow$ wireframe

5. Baselines & Results