Co-Analysis and Parameterization of 3D Shape Collections for Shape Synthesis

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MOTIVATION
- Availability of shape collections in online repositories
- Create new shapes by combining parts of existing shapes

CO-ANALYSIS
1. Compute face-level features
2. Segment shapes individually
3. Cluster segments based on features

PARAMETERIZATION
1. Create structural graphs
2. Analyze spatial arrangements between pairs of parts
3. Compute a few parameters to browse the collection

EXPLORATION
- Change parameter values to find other shapes in the collection
- Visual representation of changes
- Copy-paste parts to alter structure

SHAPE SYNTHESIS
- Exchange parts between shapes
- Parts are aligned automatically
- Repeat Exploration and Synthesis steps to create a new shape