CVPR SEATTLE WASHINGTON JUNE 16-18 2020

3D-MPA: Multi Proposal Aggregation for 3D Semantic Instance Segmentation

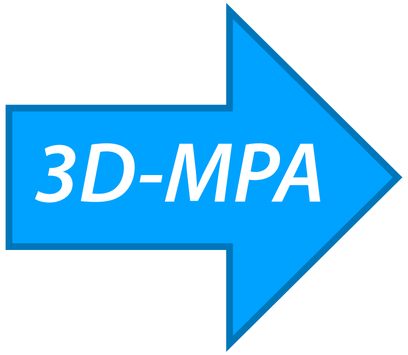
Francis Engelmann[1,2] Martin Bokeloh[1] Alireza Fathi[1] Bastian Leibe[2] Matthias Nießner[3]

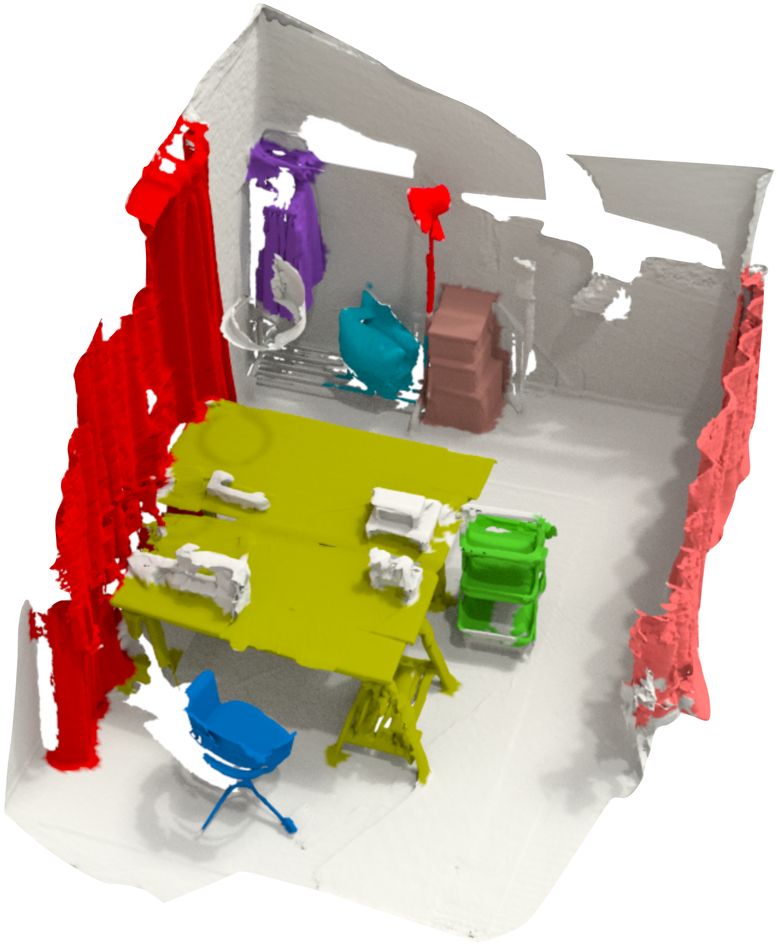
[1] Google
[2] RWTH Aachen University
[3] Technical University of Munich

Google RWTH AACHEN UNIVERSITY TUM

3D Semantic Instance Segmentation

Reconstructed 3D Scene



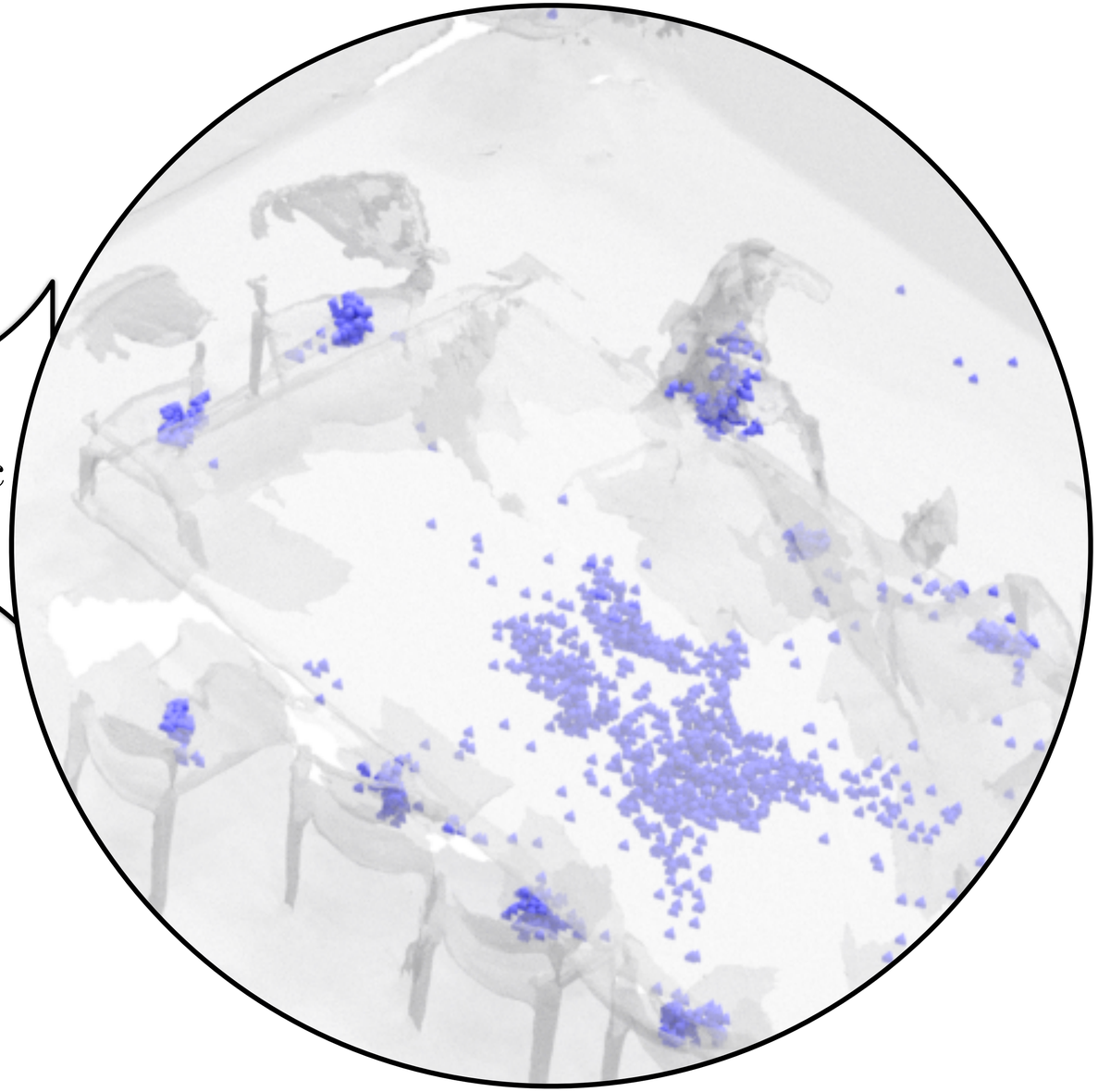


3D Semantic Instances

3D-MPA: Proposal Generation

Reconstructed 3D Scene

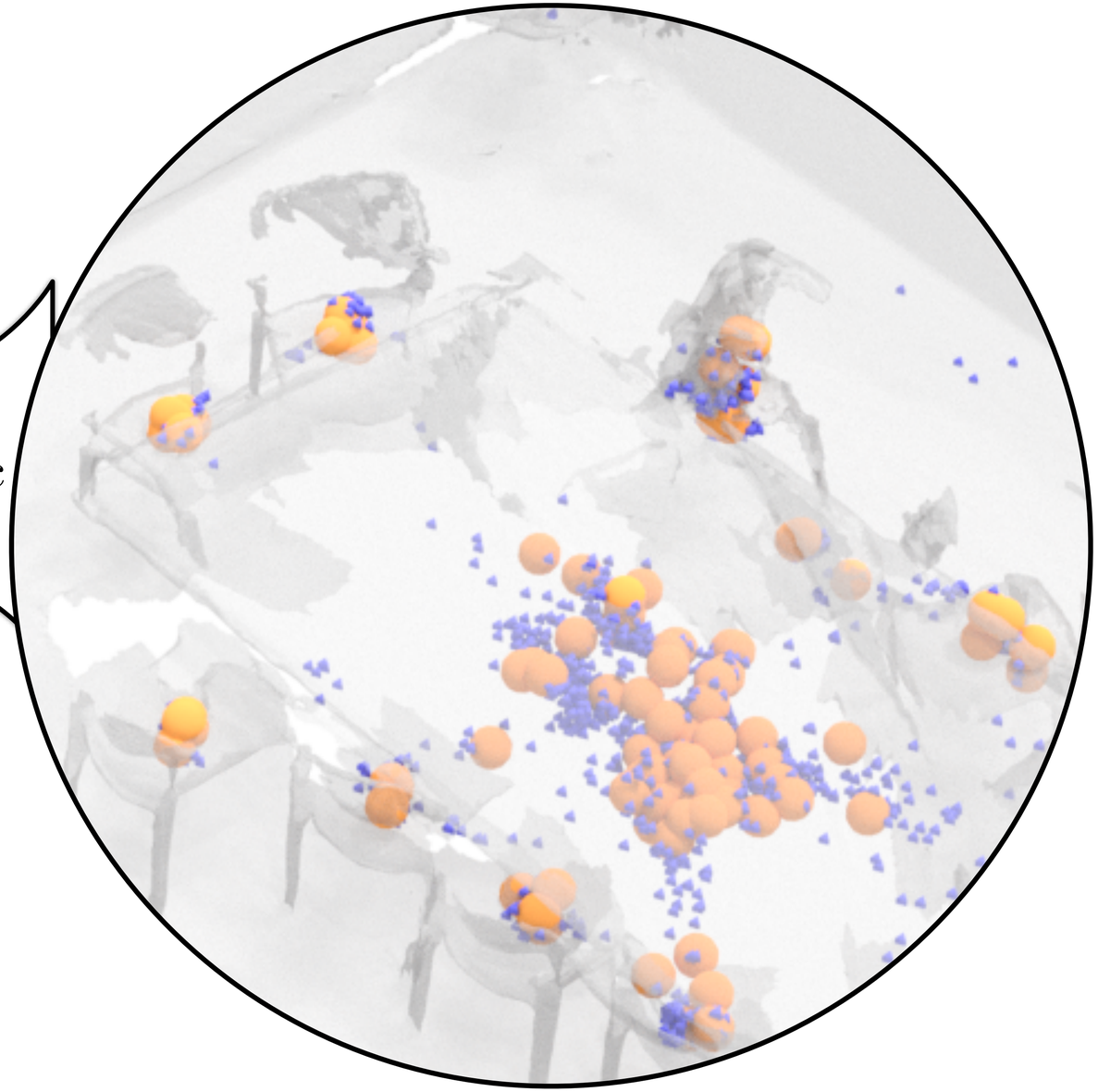
Sparse
Volumetric
Backbone



3D-MPA: Proposal Generation

Reconstructed 3D Scene

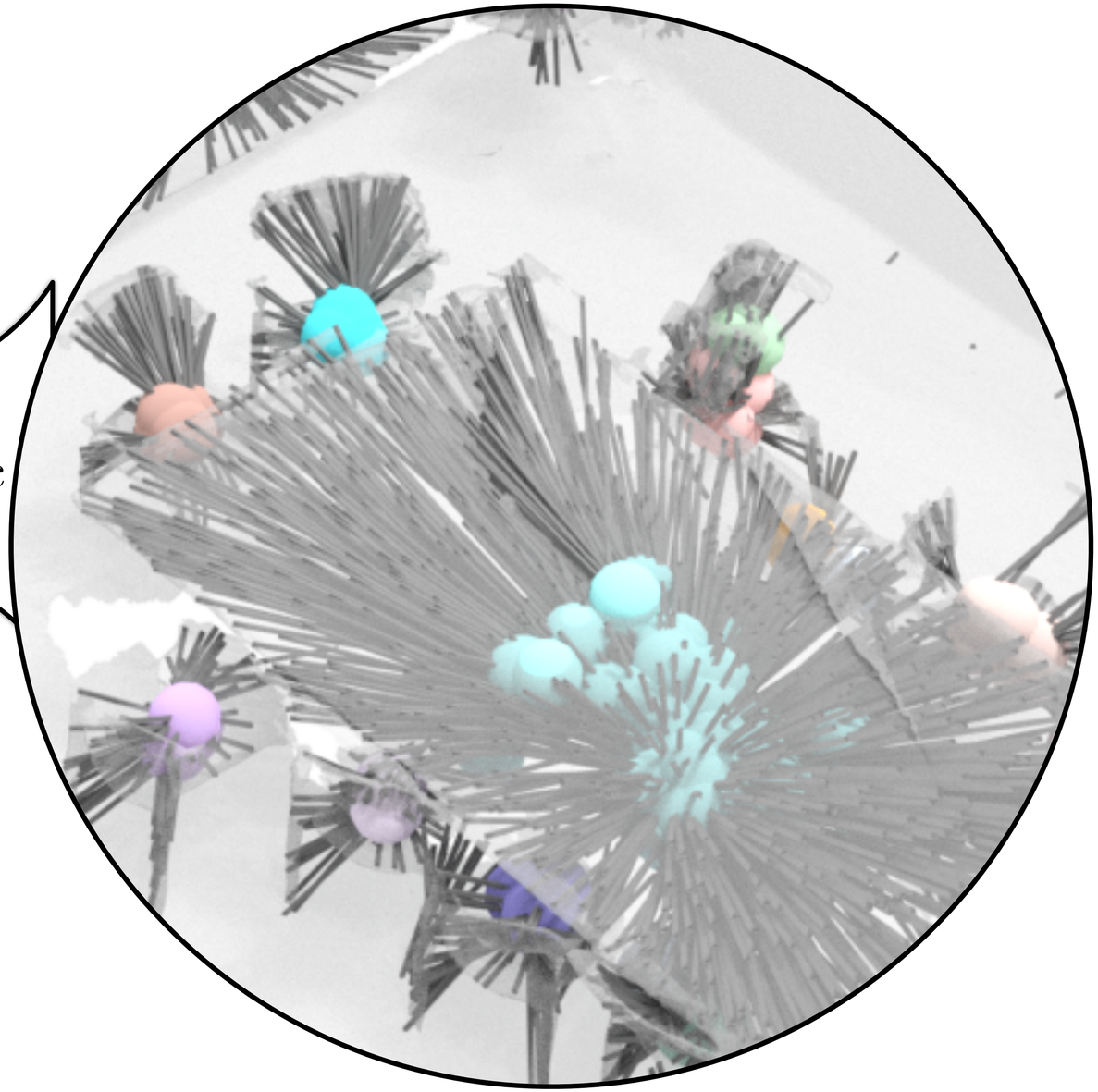
Sparse
Volumetric
Backbone



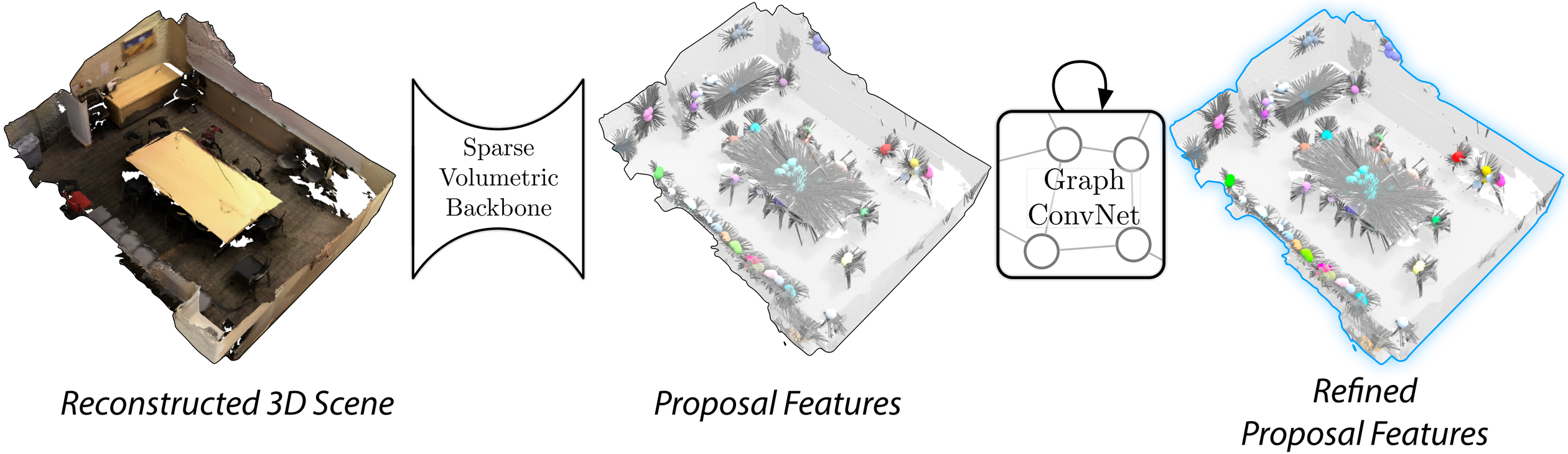
3D-MPA: Proposal Generation

Reconstructed 3D Scene

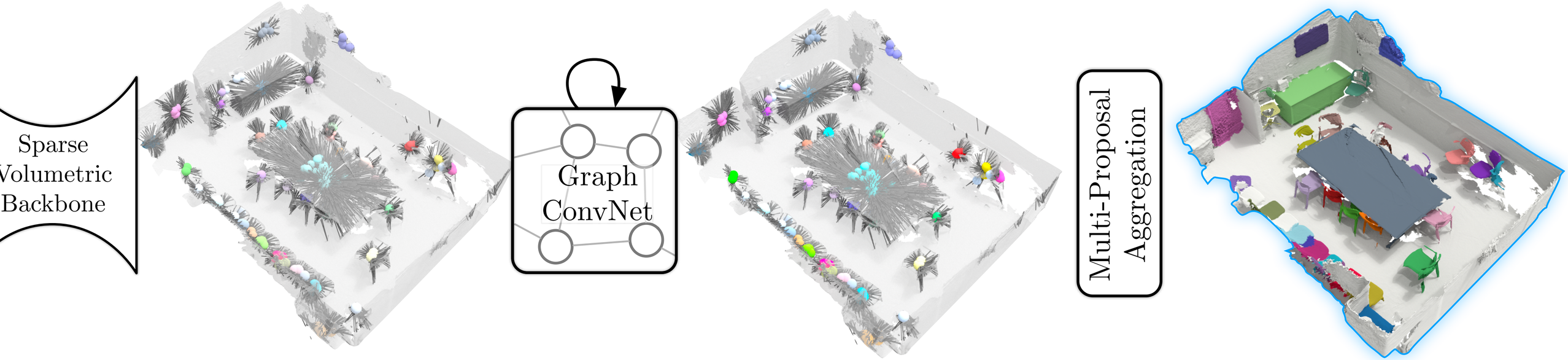
Sparse
Volumetric
Backbone



3D-MPA: Proposal Consolidation



3D-MPA: Object Generation



Proposal Features

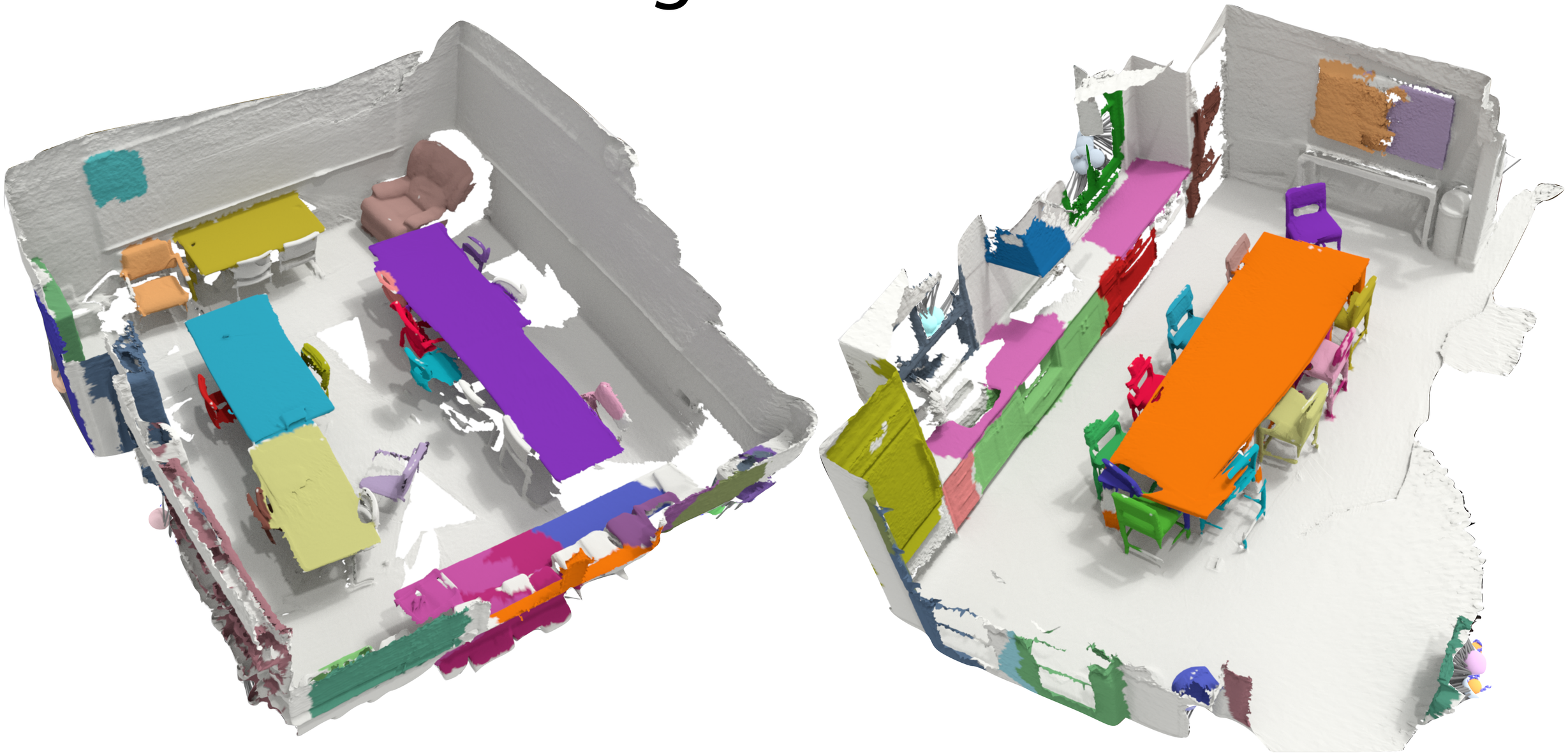
Refined Proposal Features

3D Semantic Instances

Effect of various components

1	Proposals + NMS	47.5
2	Proposal Aggregation	52.4 (+ 4.9)
3	Learned Proposal Aggregation	57.8 (+ 10.3)
4	**Learned Proposal Agg. + GCN**	**59.1** (+ 11.6)

3D Instance Segmentation on ScanNet



3D-MPA: Multi Proposal Aggregation for 3D Semantic Instance Segmentation

Francis Engelmann[1,2] Martin Bokeloh[1] Alireza Fathi[1] Bastian Leibe[2] Matthias Nießner[3]

[1] Google
[2] RWTH Aachen University
[3] Technical University of Munich