

Title: Improving Generative Models of 3D Shapes

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Abstract: There have been recent pushes in the overlap of graphics and deep learning to create better generative models for 3D shapes, in the hopes that new meshes for furniture, vehicles, and living beings can be created for low cost and time. Such models could be utilized by artists, animators, and designers to more quickly iterate on their work. Unfortunately, existing methods for creating such meshes are often poorly tuned to fine detail, leaving the meshes looking unrealistic and sometimes mangled.

This project seeks a better way to add or fix fine-grained resolution to existing methods of generating 3D shapes. We investigate the usage of various state of the art models for geometric deep learning (e.g DeepSDF, BSP-Net, MeshCNN, and various flavors of Graph Convolutional Networks) in order to either increase the quality of the starting mesh, or add neighborhood consistent detail in the form of better vertex placement and edge sharpness values.