Large Scene Rendering

- Large-Scene Rendering is hard due to scale and complexity
- Existing methods:
  - Neural rendering mainly works on small scenes
  - Graphics approaches lack realism
- NeuRas: Combines neural texture representation and rasterization
- NeuRas realistically renders large scenes at 1920 × 1080 @ 100hz

Approach: Neural Rasterization

- Scene is represented as meshes and skyboxes with neural texture features
- Use OpenGL to rasterize screen-space feature buffers from the scene representation
- MLP predicts the color from the feature and view direction. MLP is baked as a shader during inference
- Multi-layers are composited to synthesize final output

Our method achieves the best tradeoff between realism and speed.

Results On Urban Driving Scenes & Drone Scenes

- We extract the geometry from the NeRF models and then adopt NeuRas for real-time rendering.
- NeuRas performs well on coarser mesh
- MLP shader improves realism

Speedup NeRFs

- MLP shader improves realism

Ablations

- MLP shader improves realism