MINI PROJECT

AIM: 2D to 3D Reconstruction and Rendering

TEAM MEMBERS:

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TOOLS REQUIRED:

- Language: Python
- Libraries: OpenCV, numpy, Open3D
- Models used: MiDaS (pytorch model)

ABSTRACT

This project explores the transformation of 2D images into 3D models. By combining modern computer vision techniques with advanced graphics rendering, we aim to create realistic 3D reconstructions from single images. Our approach focuses on preserving the textures of the original image. The system employs depth estimation algorithms to understand spatial relationships within the image, followed by mesh generation to create the 3D structure. We enhance this reconstruction using custom graphics shaders that maintain the original image's visual properties, including lighting, color, and texture details. This integration of computer vision and real-time rendering techniques offers a practical solution for creating viewable 3D content from standard photographs. Potential application involves virtual reality content creation, real time 3D rendering of satellite images, architectural visualization and urban planning.