Swarm-Collected Light Field for 3D Object Recreation

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Project Aim

Utilize multiple drones to quickly and autonomously collect images of an area or object of interest via adaptively sampling and pre-built image pipeline. The resulting data should be processed to allow for occlusion removal, novel perspective creation, and 3D reconstruction.

Function

This project would allow for new ways to visualize areas of interest. From a tactical perspective, the light field for an area may be collected, allowing for an immersive analysis of said area. A drone swarm is well equipped to gather this data quickly and efficiently, with the potential to adapt to changes in number or environment.

Criterion

- Drones are equipped with cameras and capable of collecting images.
- Localization method such as ORB-SLAM2 used to determine drone's location relative to area of interest.
- The area is adaptively sampled.
- Resulting data is piped through pre-built light field image interpolation and rendering pipeline.
- User is able to control view, focus, and occlusion factors.