



Overview

Background

- No immersive 3D viewer exists for UCSB campus
- Google Earth has 360° views but only along streets at fixed locations
- GoGaucho has a classroom search, but only a birds-eye view and has no visual context
- Students who don't have the time & money for physical tours struggle

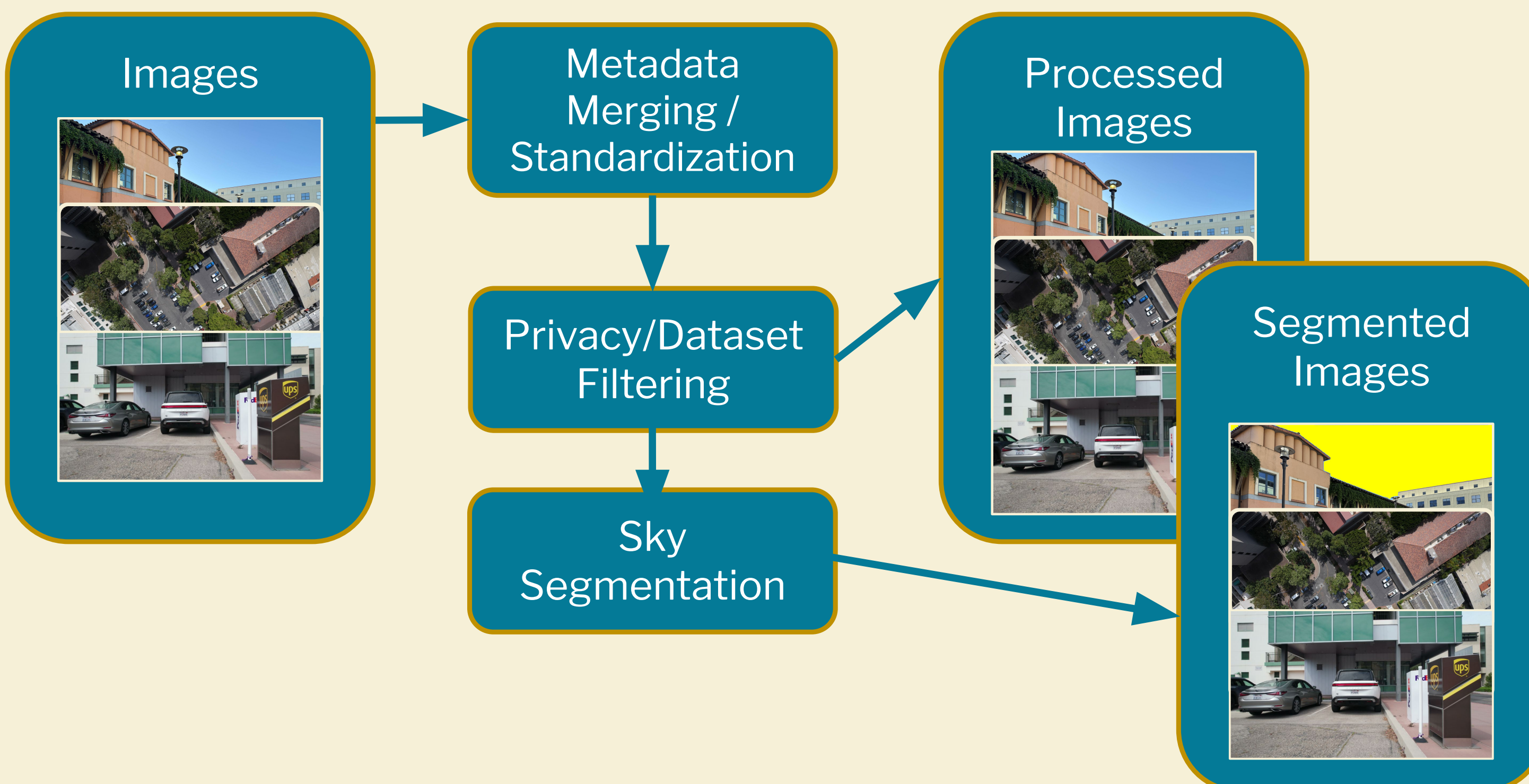
Our Solution

- Immersive, spatially-accurate 3D model of UCSB campus
- Explorable in a **web browser** or **VR** (e.g. Apple Vision Pro)
- True real-world scale, aligned to geographic coordinates
- Accessible to students, professors & visitors — anywhere, anytime

Data Collection

Privacy & Metadata Filtering

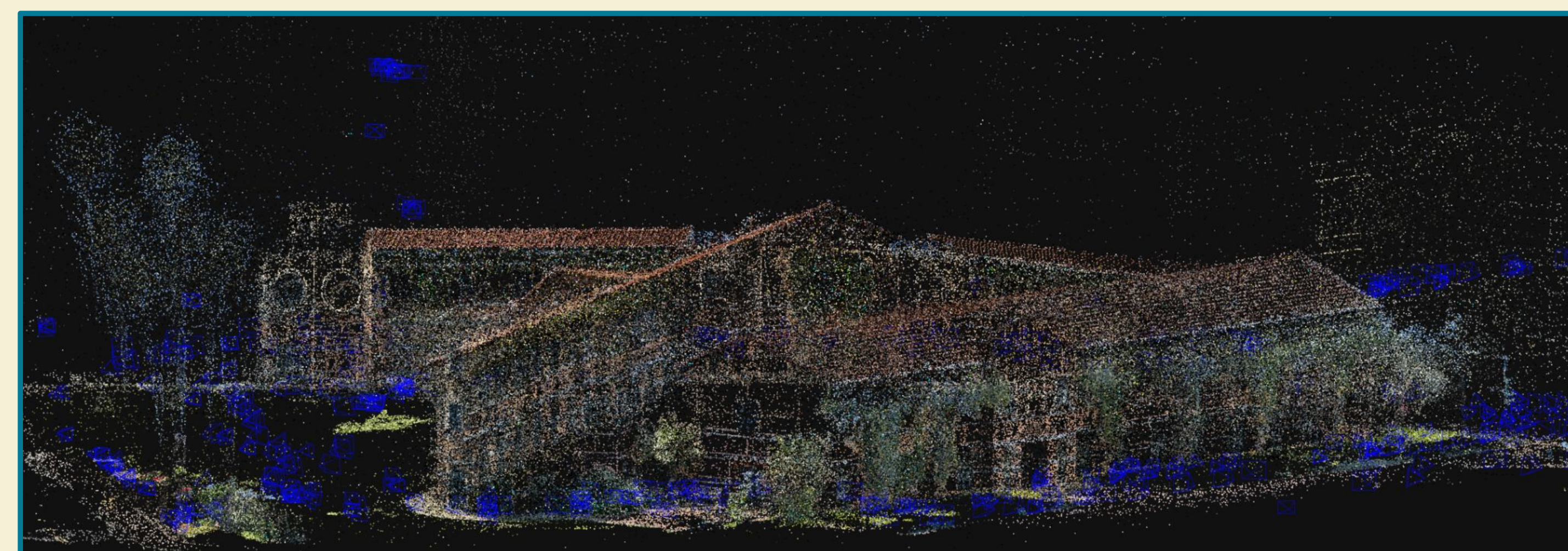
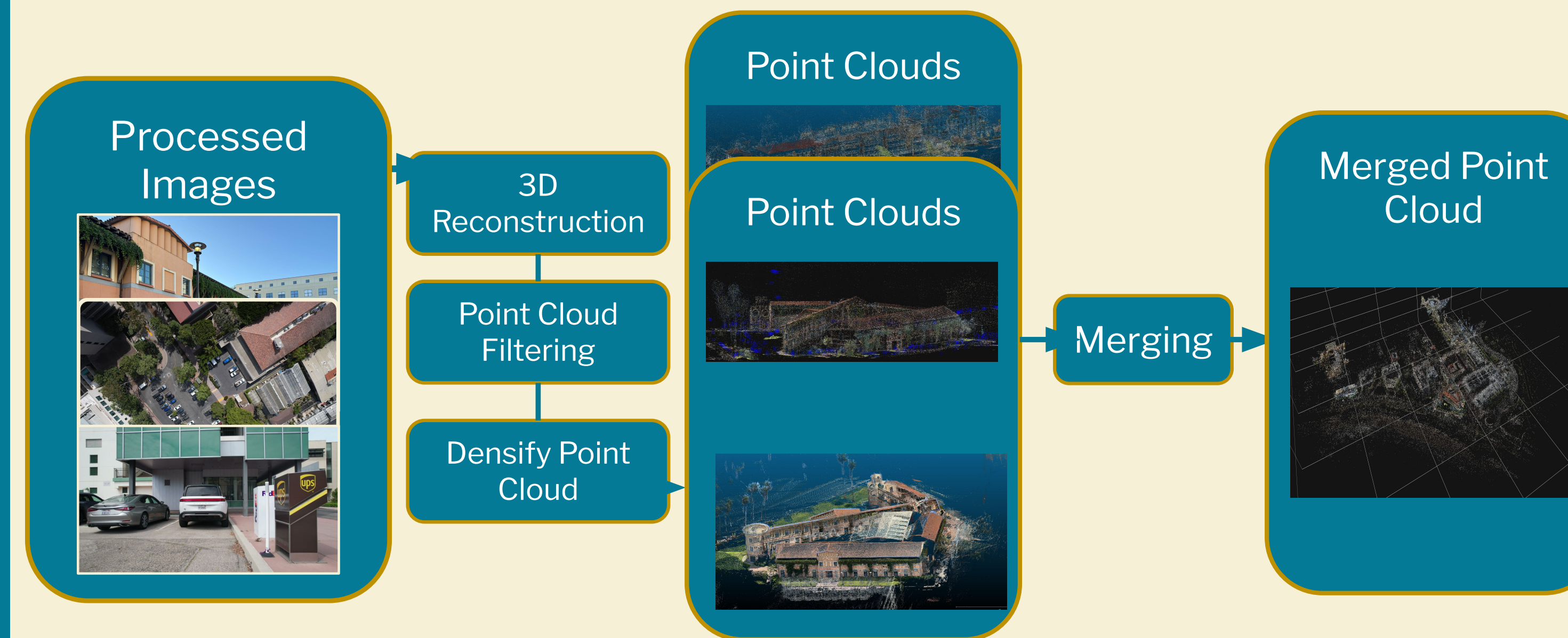
- 10,000s of images captured via mobile phones & drones
- **Centimeter-level** GPS metadata from EMLID Rx2 devices for precise geospatial alignment
- YOLO-based pipeline auto-anonymizes faces & license plates



3D Reconstruction

Structure From Motion

- COLMAP estimates camera poses → sparse point cloud
- Multiple point clouds merged → dense coverage of campus



Sparse Point Cloud of Kavli Institute of Theoretical Physics

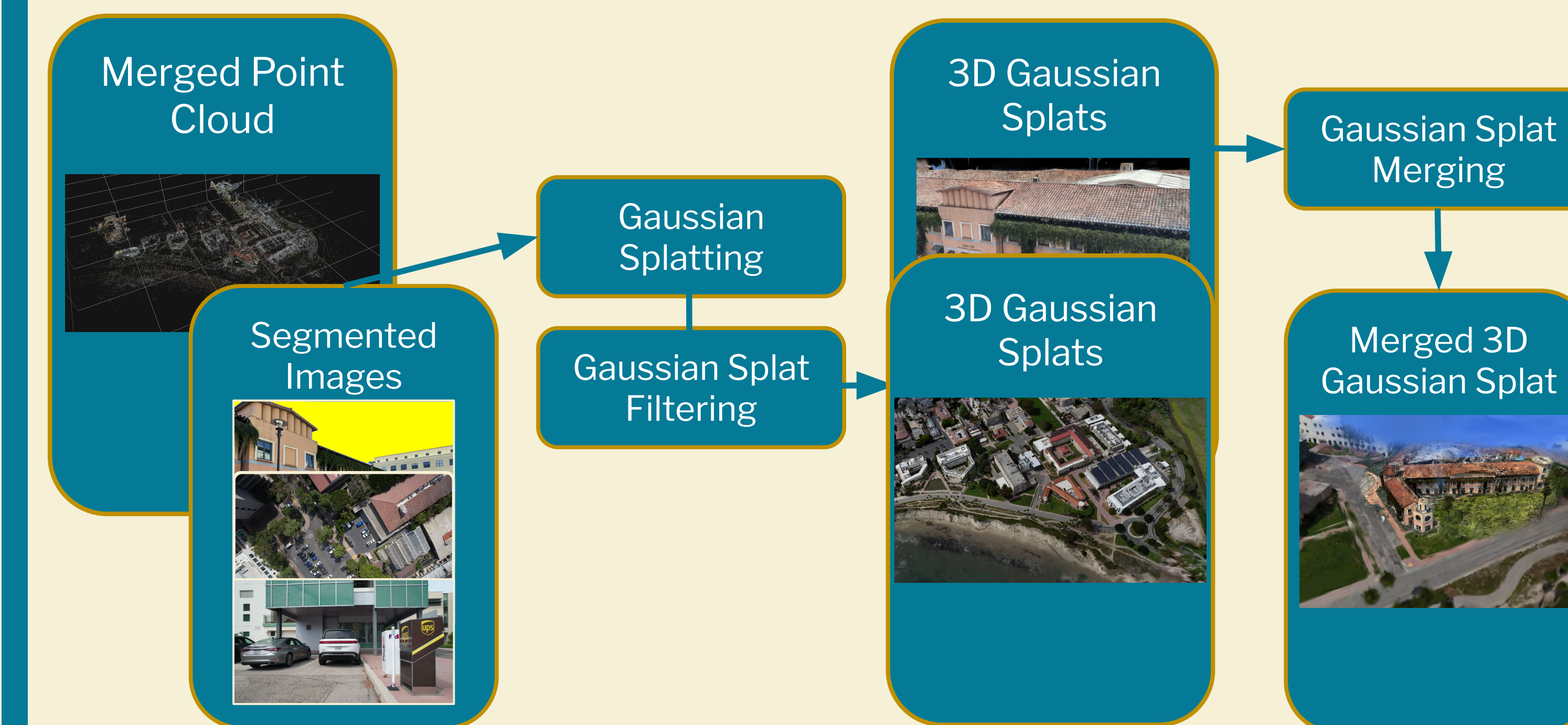


Dense Point Cloud of Drone Flight Path around the Lagoon

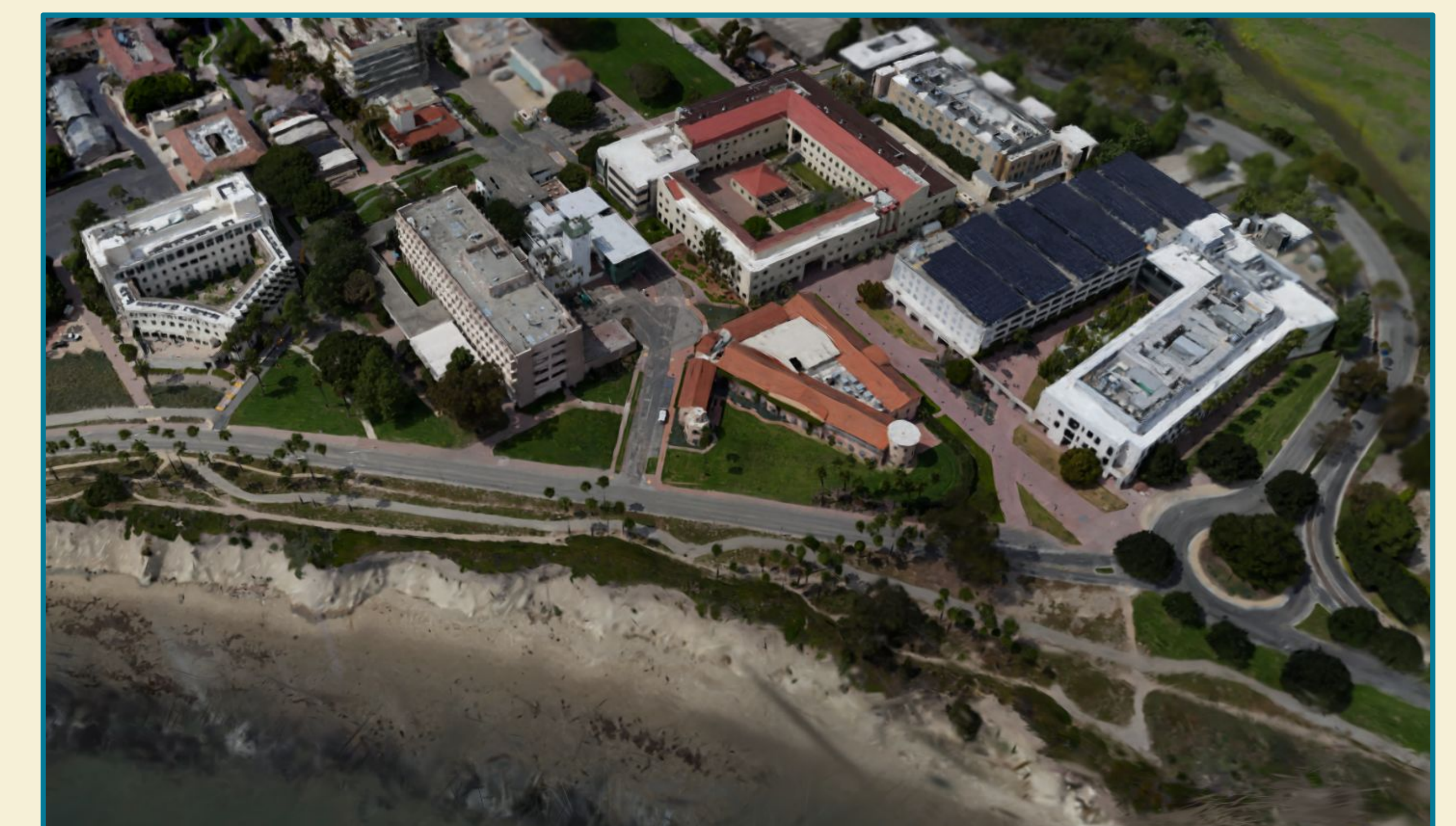
3D Gaussian Splatting

Photorealistic view

- Point clouds → millions of optimized semi-transparent "splats"
- Regional splats merged → full photorealistic 3D campus model



Ground Truth (Left) v.s. Projection of Splat (Right) of HFH



Gaussian Splat of Drone Flight Path of East Side of Campus

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