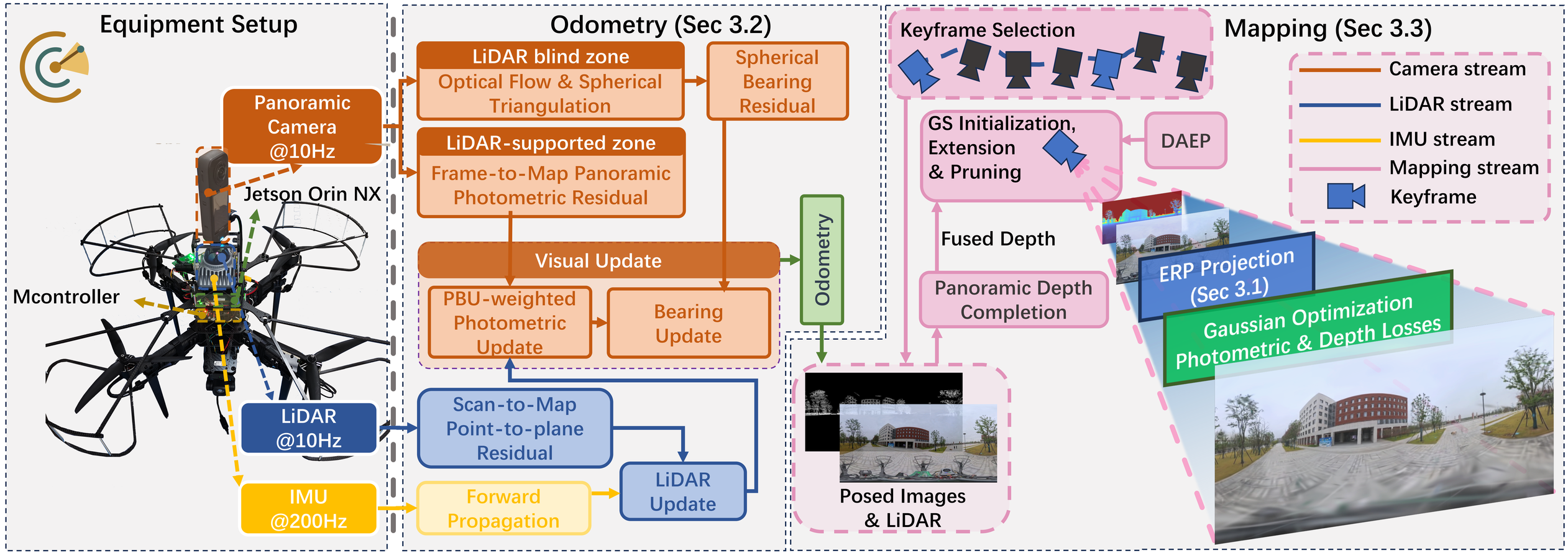
Equipment Setup
Panoramic Camera @10Hz
Jetson Orin NX
Mcontroller
LiDAR @10Hz
IMU @200Hz
Odometry (Sec 3.2)
LiDAR blind zone
Optical Flow & Spherical Triangulation
Spherical Bearing Residual
LiDAR-supported zone
Frame-to-Map Panoramic Photometric Residual
Visual Update
PBU-weighted Photometric Update
Bearing Update
Odometry
Scan-to-Map Point-to-plane Residual
LiDAR Update
Forward Propagation
Keyframe Selection
Mapping (Sec 3.3)
Camera stream
LiDAR stream
IMU stream
Mapping stream
Keyframe
GS Initialization, Extension & Pruning
DAEP
Fused Depth
Panoramic Depth Completion
ERP Projection (Sec 3.1)
Gaussian Optimization Photometric & Depth Losses
Posed Images & LiDAR