NRI: FND: Consistent Distributed Visual-Inertial Estimation and Perception for **Cooperative Unmanned Aerial Vehicles**

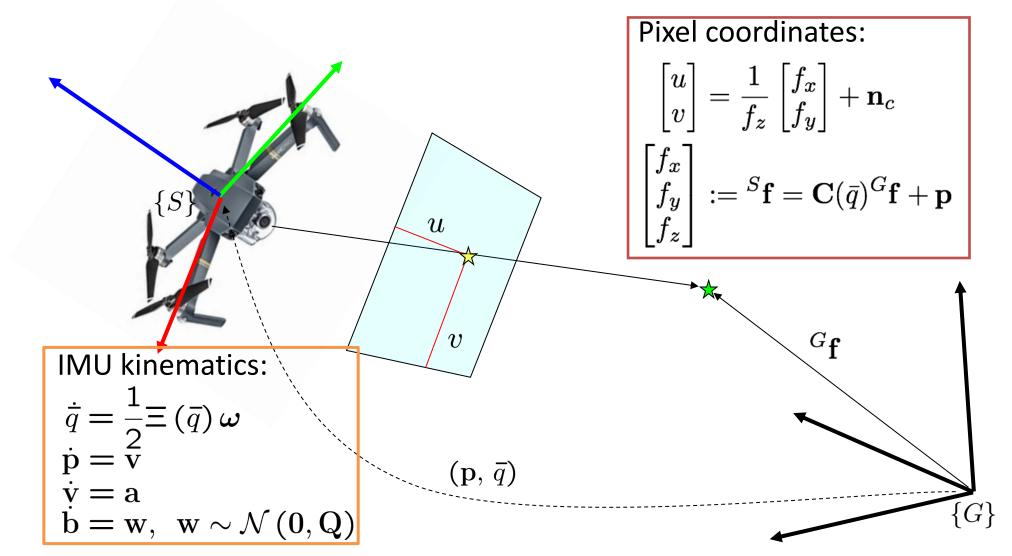
Guoquan (Paul) Huang / University of Delaware https://sites.udel.edu/robot/

1. Visual-inertial estimation

• Visual-inertial navigation system (VINS) or SLAM holds great potentials in practical applications:



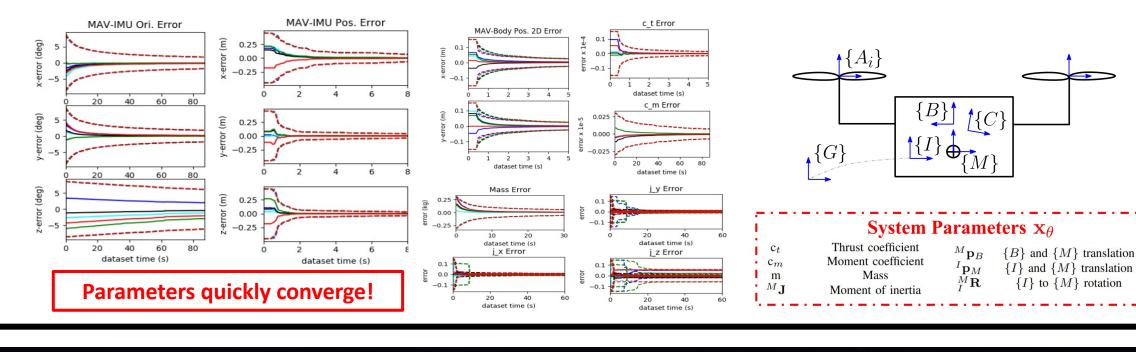
• Goal: To estimate 3D motion & scene understanding using IMUs and cameras onboard unmanned aerial vehicles (UAVs)



 Technical challenges when extending to multi-UAVs: Consistent, distributed, cooperative visual-inertial estimation under resource constraints

4. Online MAV parameter Identification [IROS 2022]

- Novel tightly-coupled Schmidt Kalman filter (SKF)-based visual inertial estimator to identify MAV parameters **online**
- Protects **consistent** motion estimation (VIO)
- Ensure accurate and robust online parameter identification



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