## **Traditional Method** Inevitable Predefined **Empirical Tuning** Integrator Noisy IMU Pose Graph **Optimization** Not Differentiable **Empirical Covariance** Generalizable Interpretable

## **AirIMU Differentiable Covariance Drifting Propagation** Uncertainty Reduced ............ IMU Differentiable **4**..... Integrator Network Pose Graph **Optimization** Differentiable Learned Covariance Interpretable Generalizable

## **Learning-based Method** $\Sigma_v, \Sigma_w$ Covariance

Network

**Ambiguous** 

**Estimation** 

Directly

regressed

Velocity

Not Intepretable

**Learned Covariance** 

IMU

Not Generalizable

Differentiable