1、跑通模型

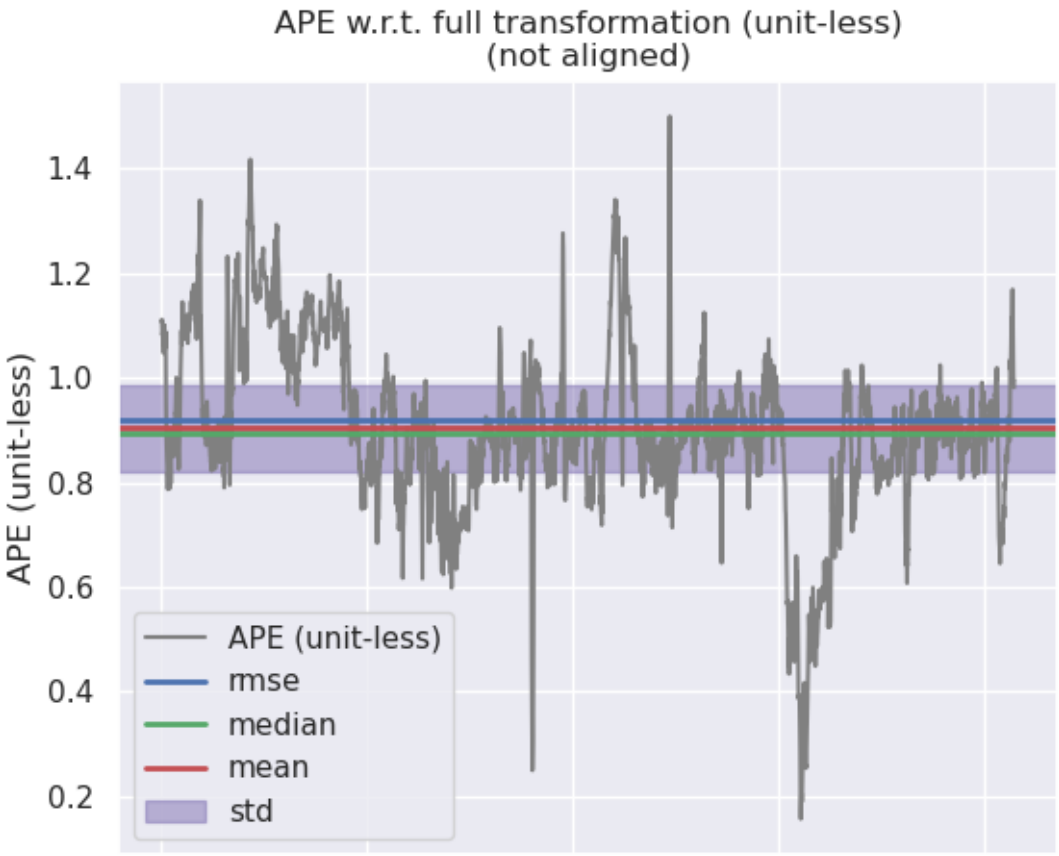
```
Eigen::Vector3d dp = pose_.block<3,1>(0,3) - T_nb.block<3,1>(0,3);
Eigen::Vector3d dv = pose_.block<3,3>(0,0).transpose()*vel_ - v_b;
Eigen::Matrix3d dR = T_nb.block<3,3>(0,0).transpose() * pose_.block<3,3>(0,0);

// TODO: set measurement equation:
Eigen::Vector3d dtheta = Sophus::SO3d::vee(dR - Eigen::Matrix3d::Identity());
YPose_.block<3,1>(0,0) = dp;
YPose_.block<3,1>(3,0) = dv;
YPose_.block<3,1>(6,0) = dtheta;
Y = YPose_;
GPose_.setZero();
GPose_.block<3,3>(0, kIndexErrorPos) = Eigen::Matrix3d::Identity();
GPose_.block<3,3>(3, kIndexErrorVel) = pose_.block<3,3>(0,0).transpose();
GPose_.block<3,3>(3, kIndexErrorOri) = Sophus::SO3d::hat(v_b);
// GPose_.block<3,3>(3, kIndexErrorOri) = Sophus::SO3d::hat(pose_.block<3,3>(0,0).transpose()*vel_);
GPose_.block<3,3>(6, kIndexErrorOri) = Eigen::Matrix3d::Identity();

G = GPose_;

CPose_.setZero();

CPose_.block<3,3>(0,kIndexNoiseAccel) = Eigen::Matrix3d::Identity();
CPose_.block<3,3>(3, kIndexNoiseGyro) = Eigen::Matrix3d::Identity();
CPose_.block<3,3>(6,kIndexNoiseBiasAccel) = Eigen::Matrix3d::Identity();

Eigen::MatrixXd C = CPose_;
```

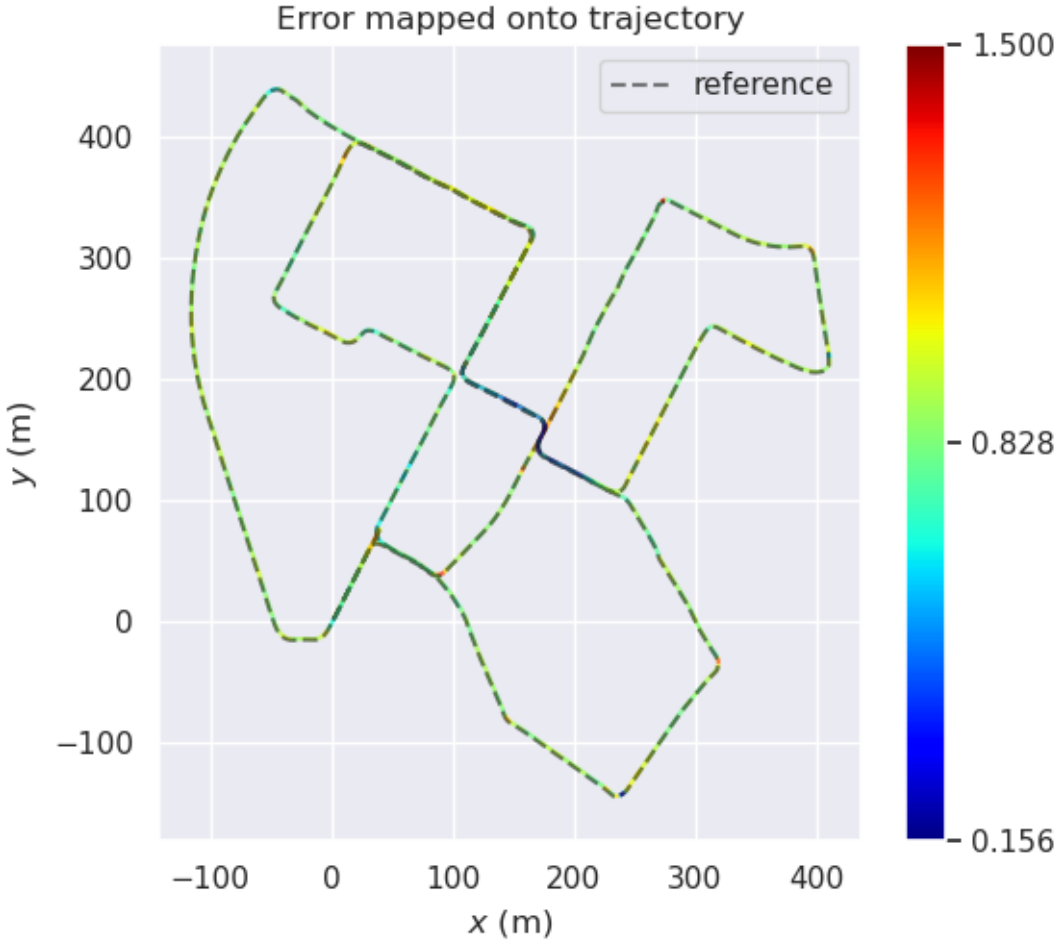
$$\boldsymbol{y} = \begin{bmatrix} \delta\bar{\boldsymbol{p}} \\ \delta\bar{\boldsymbol{v}}^b \\ \delta\bar{\boldsymbol{\theta}} \end{bmatrix}$$

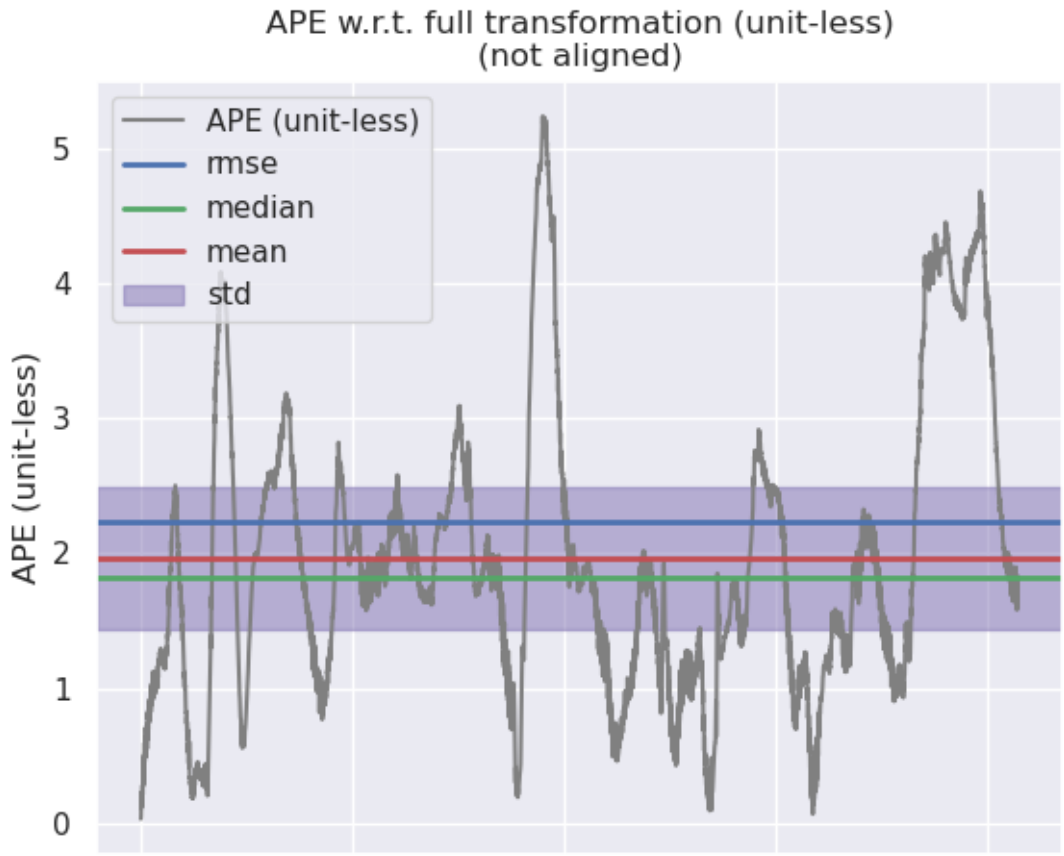
$$\boldsymbol{G}_t = \begin{bmatrix} \boldsymbol{I}_3 & \boldsymbol{0} & \boldsymbol{0} & \boldsymbol{0} & \boldsymbol{0} \\ \boldsymbol{0} & \boldsymbol{R}_{bw} & [\boldsymbol{v}^b]_\times & \boldsymbol{0} & \boldsymbol{0} \\ \boldsymbol{0} & \boldsymbol{0} & \boldsymbol{I}_3 & \boldsymbol{0} & \boldsymbol{0} \end{bmatrix}$$

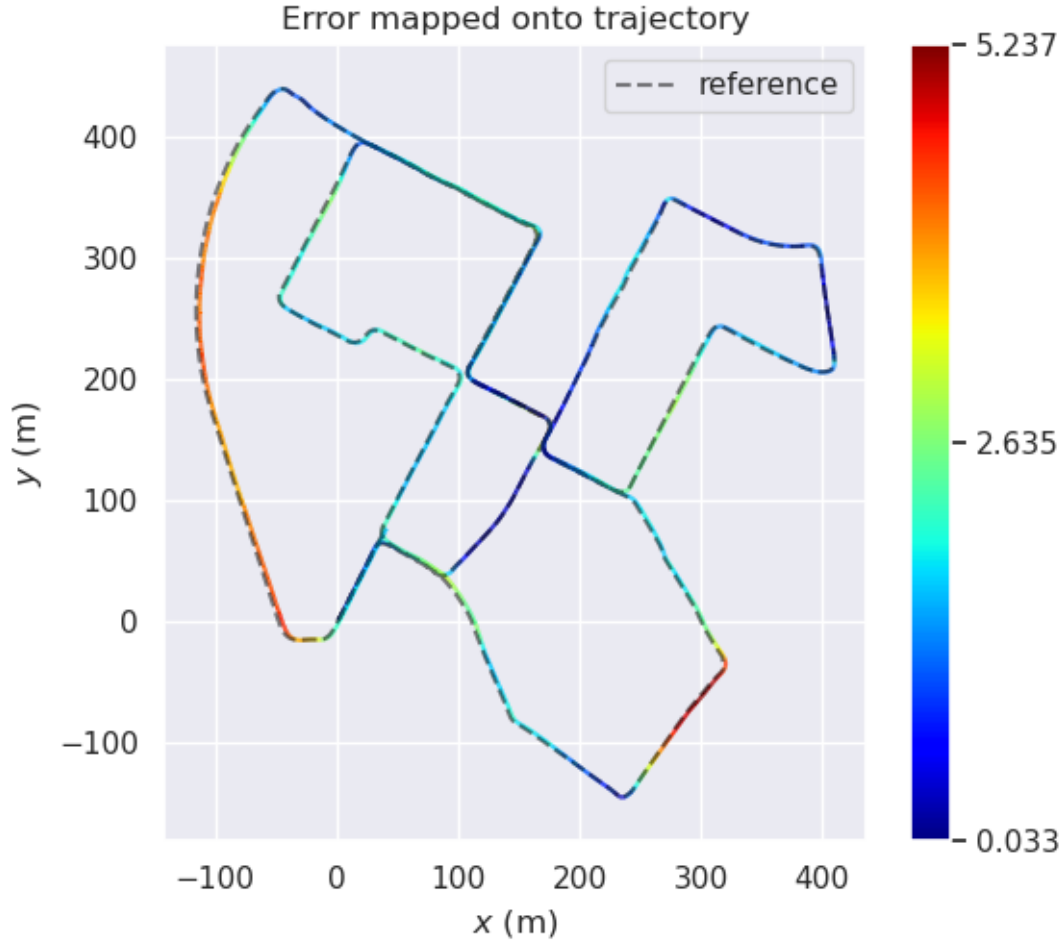
$$\boldsymbol{C}_t = \begin{bmatrix} \boldsymbol{I}_3 & \boldsymbol{0} & \boldsymbol{0} \\ \boldsymbol{0} & \boldsymbol{I}_3 & \boldsymbol{0} \\ \boldsymbol{0} & \boldsymbol{0} & \boldsymbol{I}_3 \end{bmatrix}$$

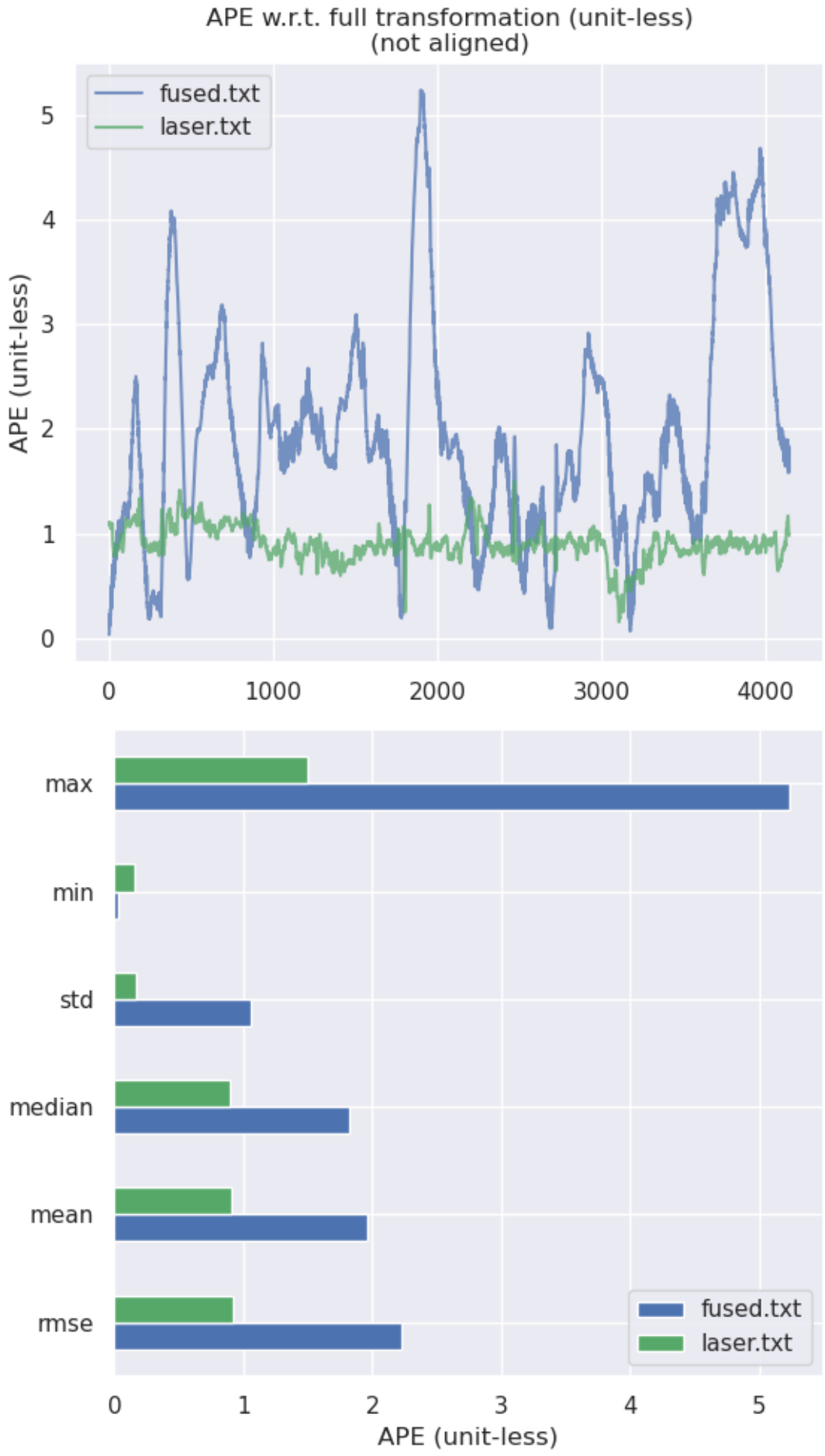
2、evo 评估

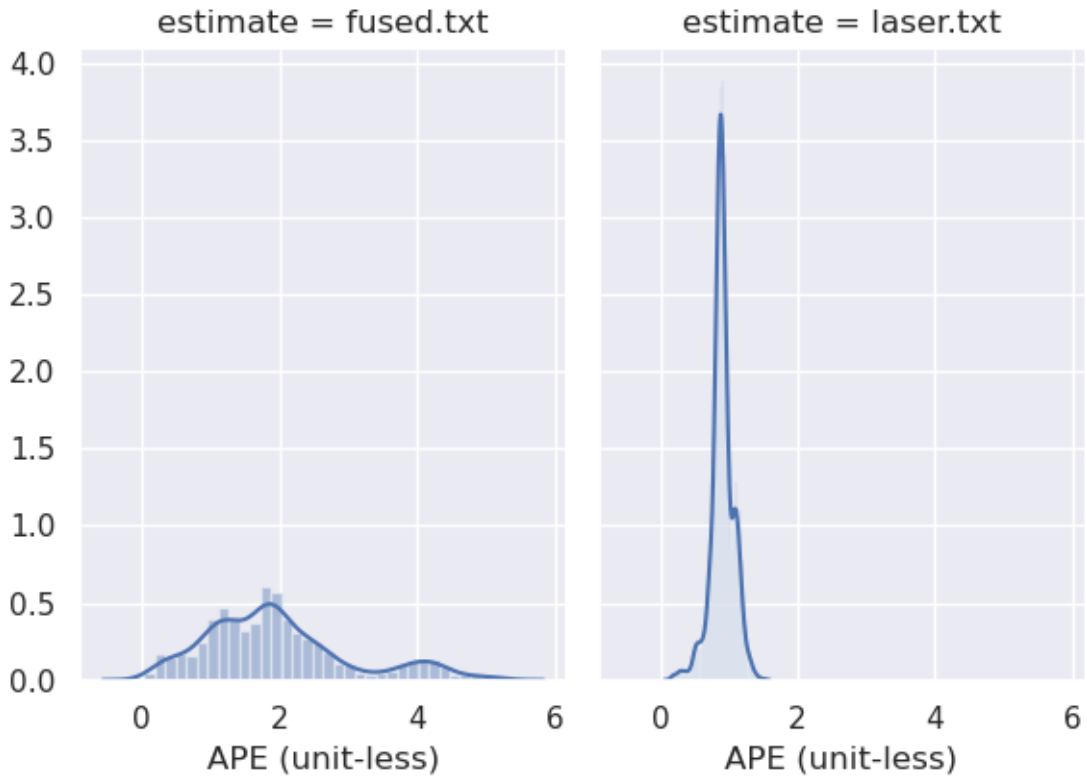

APE w.r.t. full transformation (unit-less)
(not aligned)
APE (unit-less)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
APE (unit-less)
rmse
median
mean
std


Error mapped onto trajectory
reference
400
300
200
100
0
−100
y (m)
−100
0
100
200
300
400
x (m)
1.500
0.828
0.156

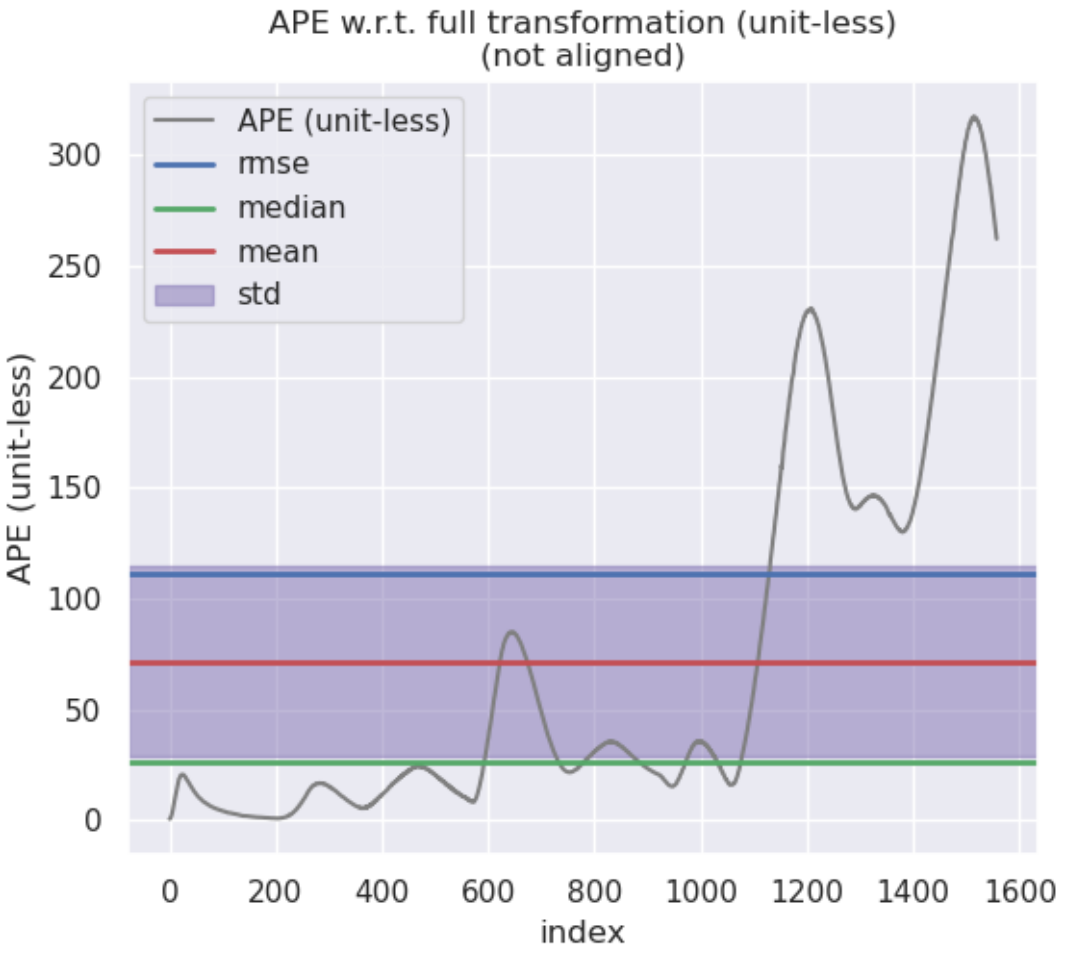

APE w.r.t. full transformation (unit-less)
(not aligned)
APE (unit-less)
rmse
median
mean
std
APE (unit-less)
0
1
2
3
4
5

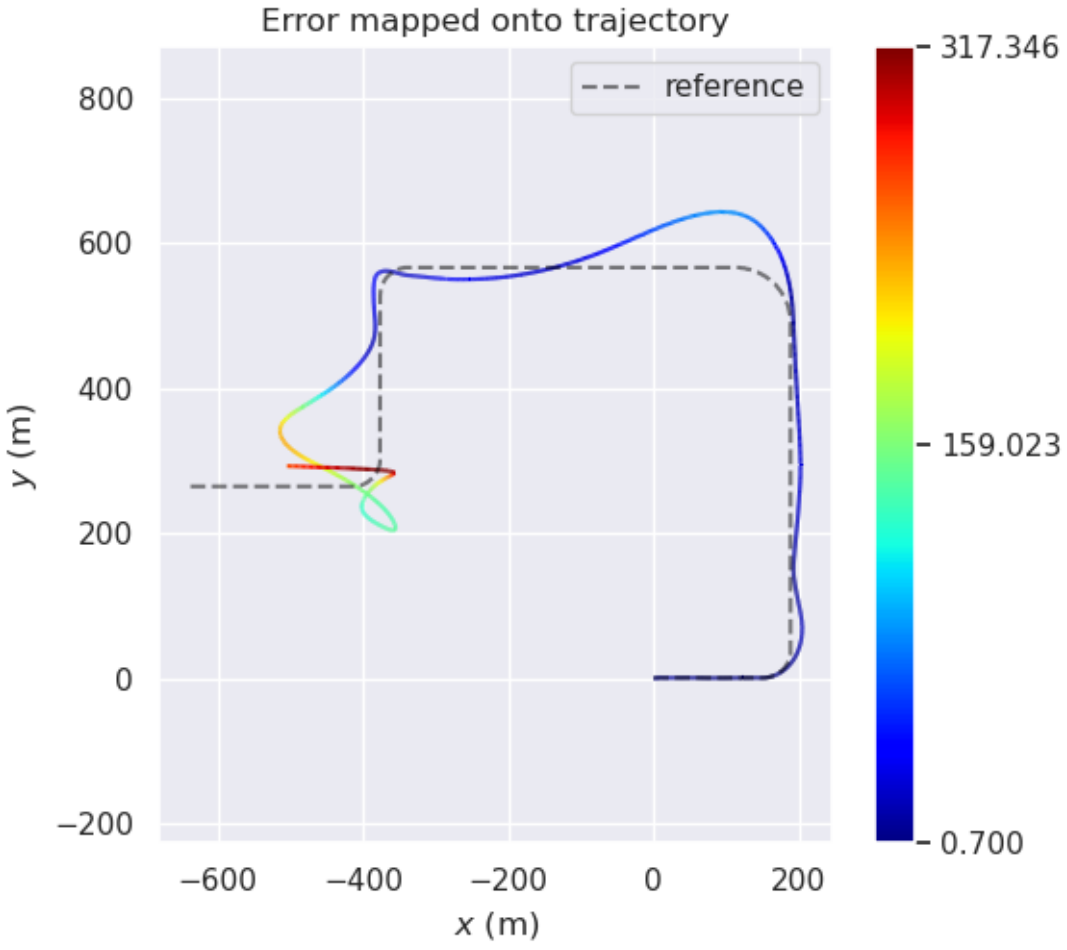

Error mapped onto trajectory
reference
5.237
2.635
0.033
y (m)
400
300
200
100
0
−100
−100
0
100
200
300
400
x (m)


APE w.r.t. full transformation (unit-less)
(not aligned)
fused.txt
laser.txt
APE (unit-less)
0
1
2
3
4
5
0
1000
2000
3000
4000
max
min
std
median
mean
rmse
fused.txt
laser.txt
0
1
2
3
4
5
APE (unit-less)


estimate = fused.txt
estimate = laser.txt
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
2
4
6
APE (unit-less)
0
2
4
6
APE (unit-less)

3、仿真数据 evo 评估


APE w.r.t. full transformation (unit-less)
(not aligned)
APE (unit-less)
rmse
median
mean
std
APE (unit-less)
index
0
50
100
150
200
250
300
0
200
400
600
800
1000
1200
1400
1600


Error mapped onto trajectory
reference
317.346
159.023
0.700
y (m)
x (m)
800
600
400
200
0
−200
−600
−400
−200
0
200