

VECtor: A Versatile Event-Centric Benchmark for Multi-Sensor SLAM

Supplementary Material

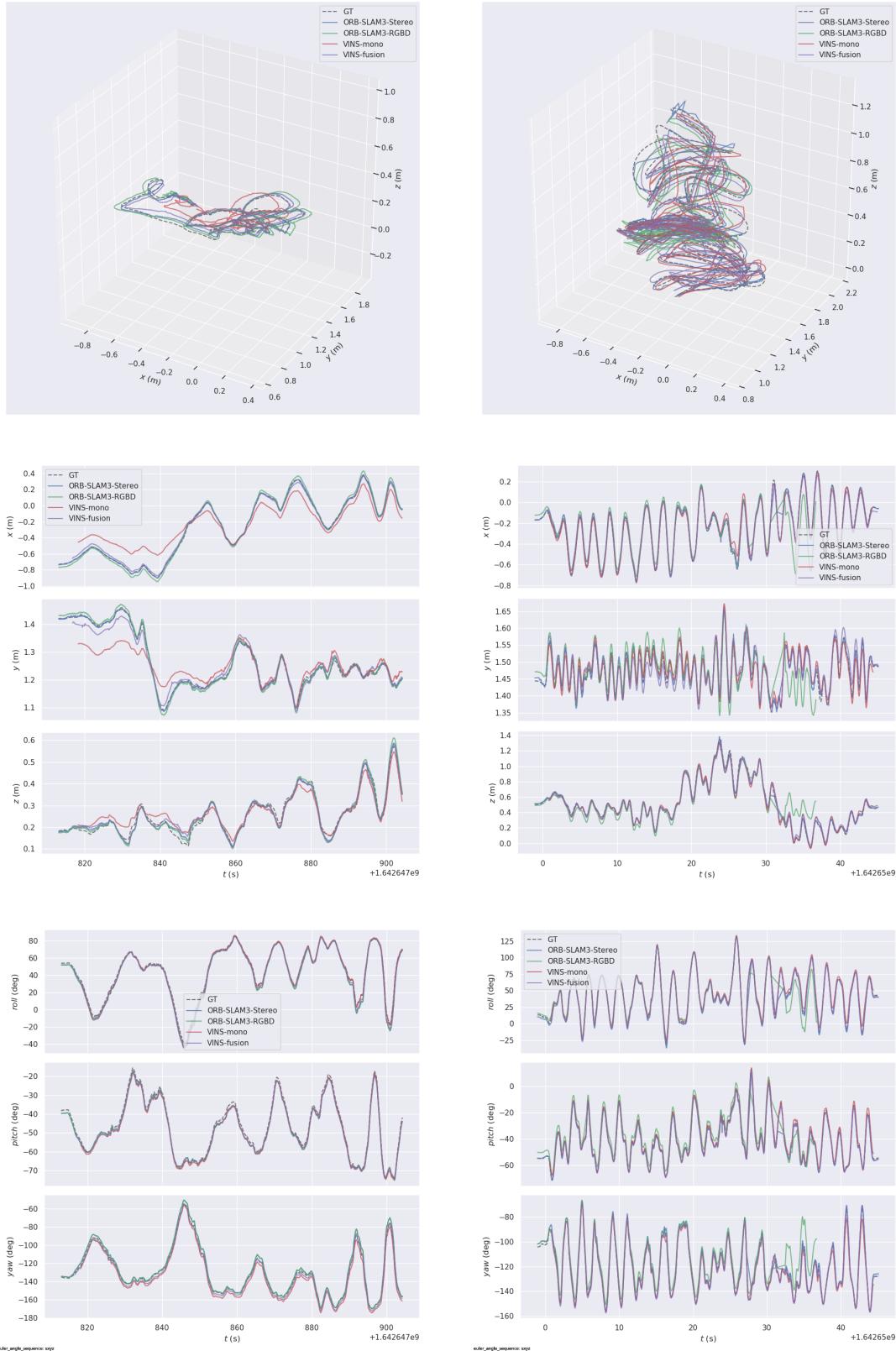
Small-scale Data Sequences

Table 1: State-Of-The-Art algorithms' Performance

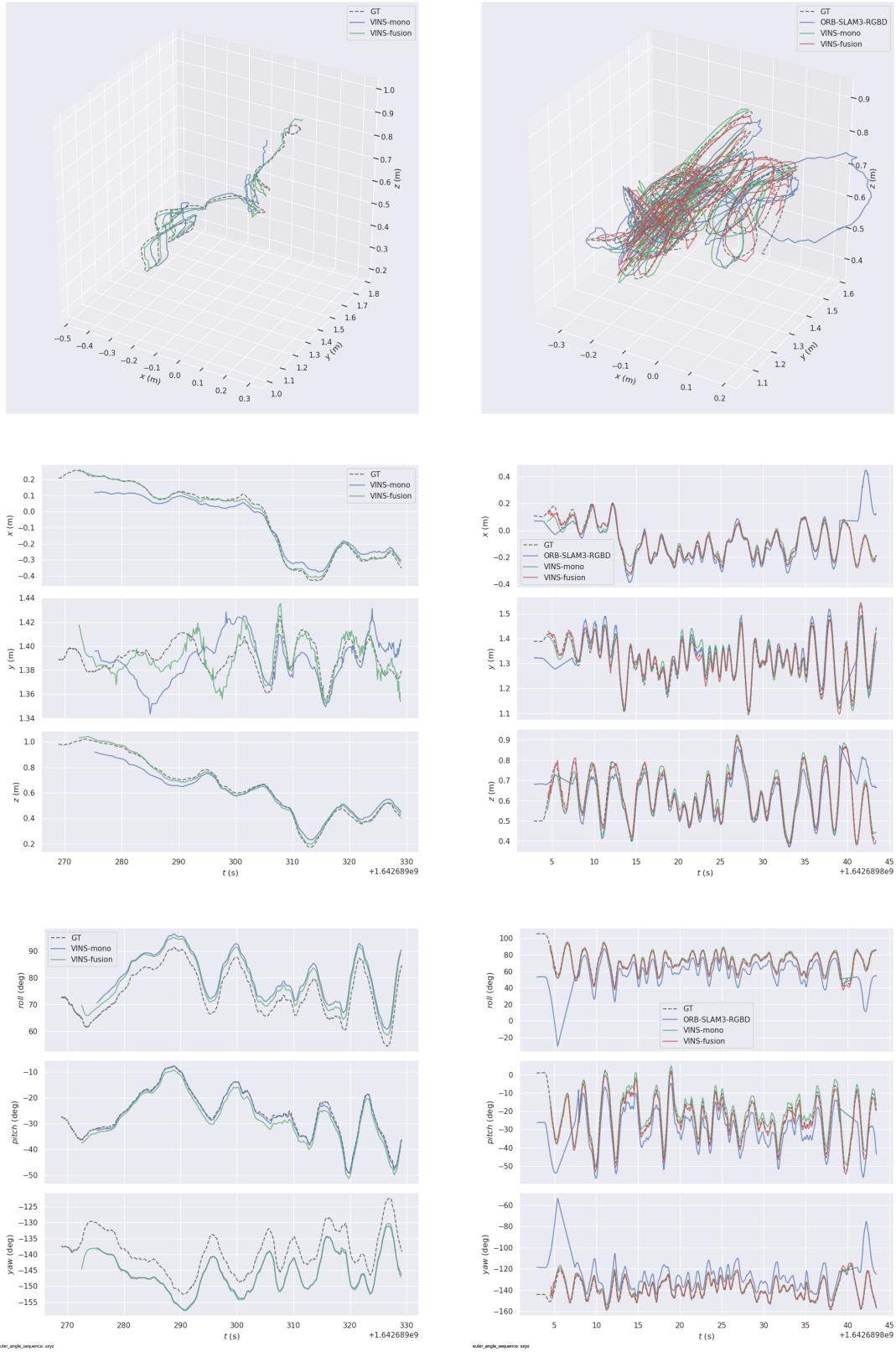
Data Sequence	ORB-SLAM3 Stereo	ORB-SLAM3 RGBD	VINS mono	VINS fusion
<i>desk-normal</i>	✓	✓	✓	✓
<i>desk-fast</i>	✓	✗	✓	✓
<i>hdr-normal</i>	✗	✗	✓	✓
<i>hdr-fast</i>	✗	✗	✓	✓
<i>mountain-normal</i>	✗	✓	✓	✓
<i>mountain-fast</i>	✗	✓	✓	✗
<i>robot-normal</i>	✓	✓	✓	✓
<i>robot-fast</i>	✓	✓	✓	✓
<i>sofa-normal</i>	✓	✓	✓	✓
<i>sofa-fast</i>	✓	✓	✓	✓

- **ORB-SLAM3-Stereo** takes the readings from the regular stereo camera.
- **ORB-SLAM3-RGBD** takes the readings from the left regular camera, and the depth readings reprojected onto the left regular frame.
- **VINS-mono** takes the readings from the left regular camera and the IMU.
- **VINS-fusion** takes the readings from the regular stereo camera and the IMU.
- ✓ indicates a good result performed by this algorithm.
- ✓ indicates an average result performed by this algorithm.
- ✗ indicates an incomplete result performed by this algorithm.
- ✗ indicates no result can be generated by this algorithm.
- All trajectories are first transformed to the same reference frame as the ground truth poses by extrinsics, then further aligned with all poses by Umeyama's SE(3) method.

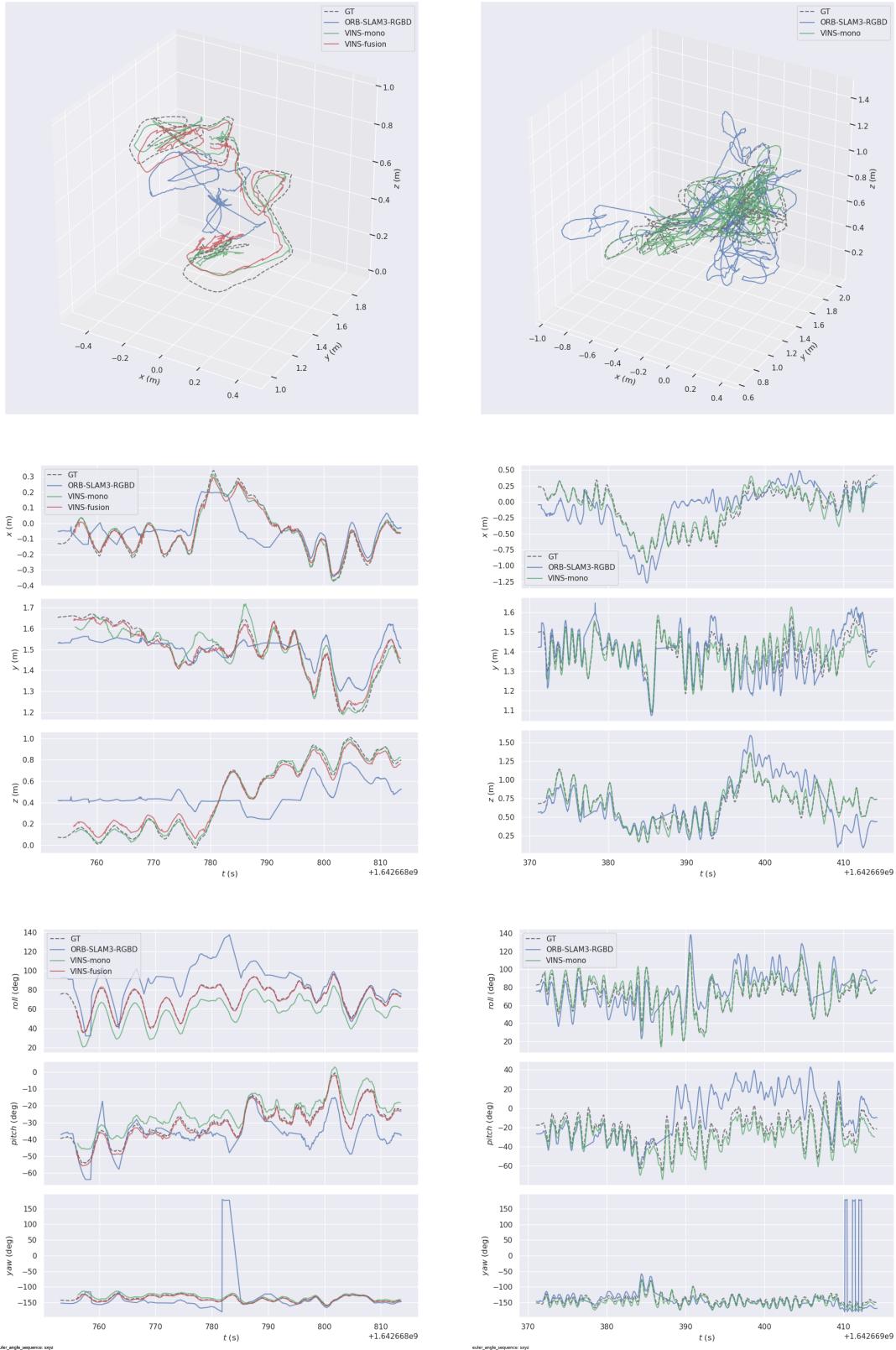
desk-normal (left column) and desk-fast (right column)



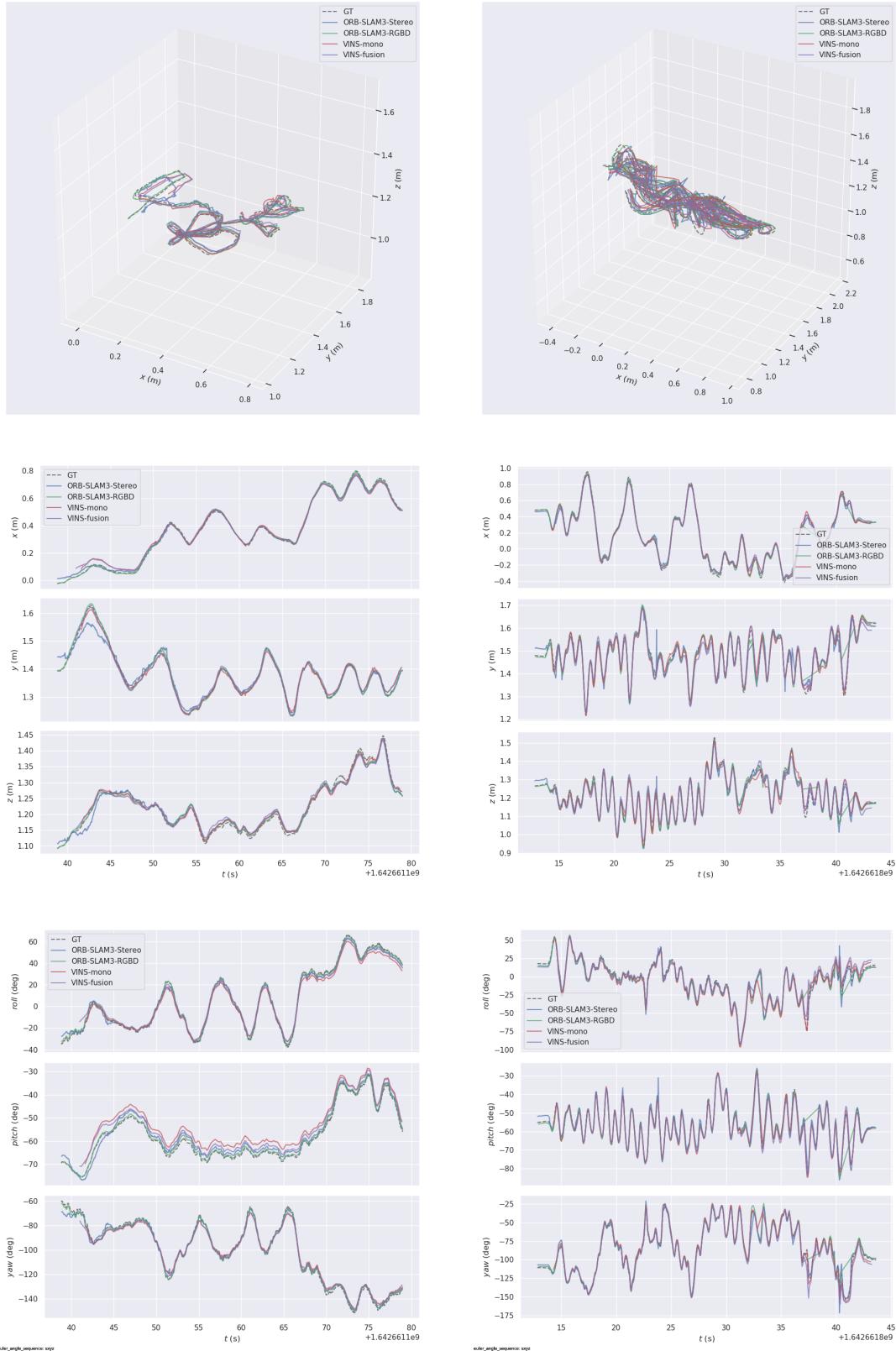
hdr-normal (left column) and hdr-fast (right column)



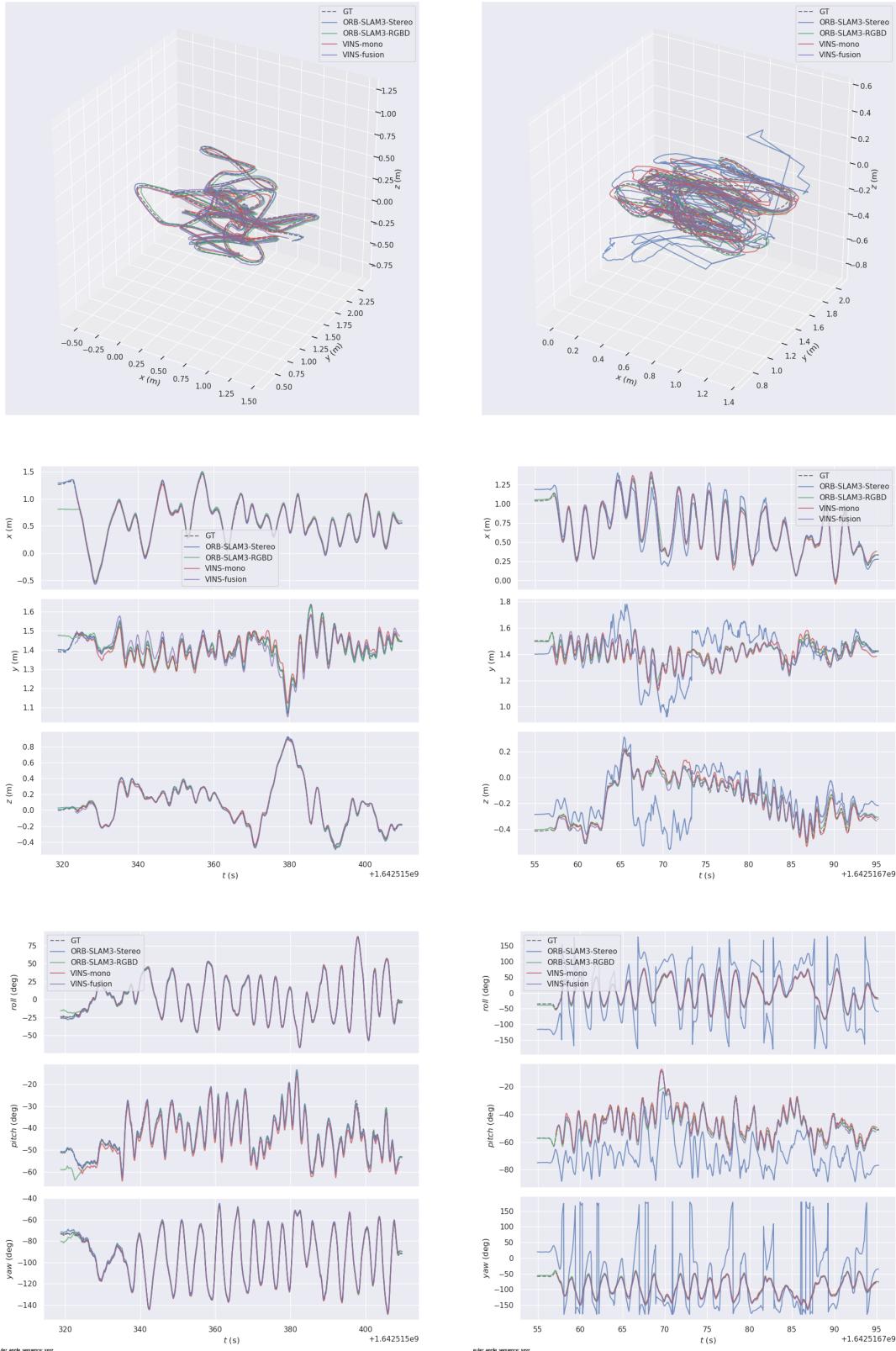
mountain-normal (left column) and mountain-fast (right column)



robot-normal (left column) and robot-fast (right column)



sofa-normal (left column) and sofa-fast (right column)



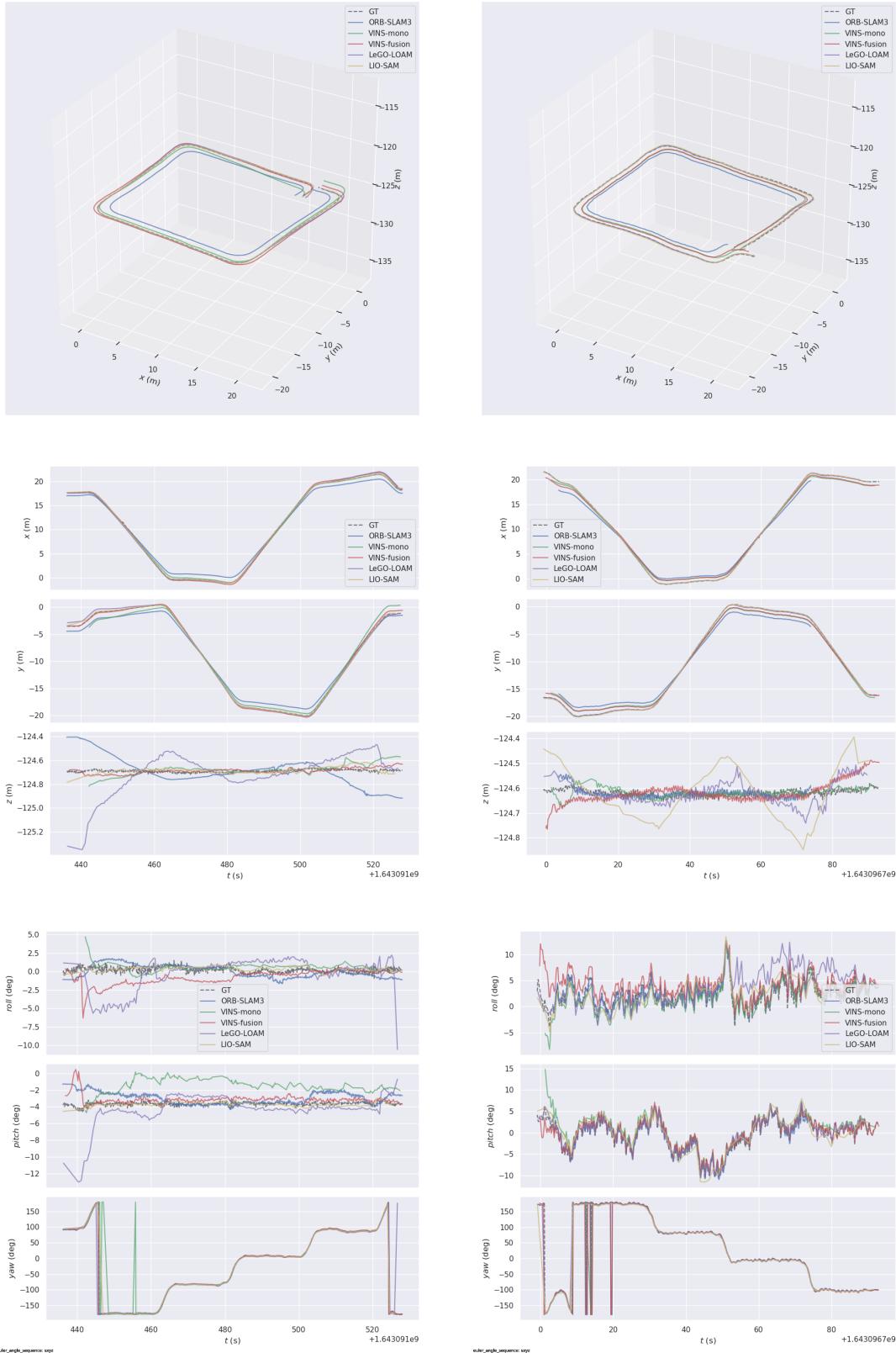
Large-scale Data Sequences

Table 2: State-Of-The-Art algorithms' Performance

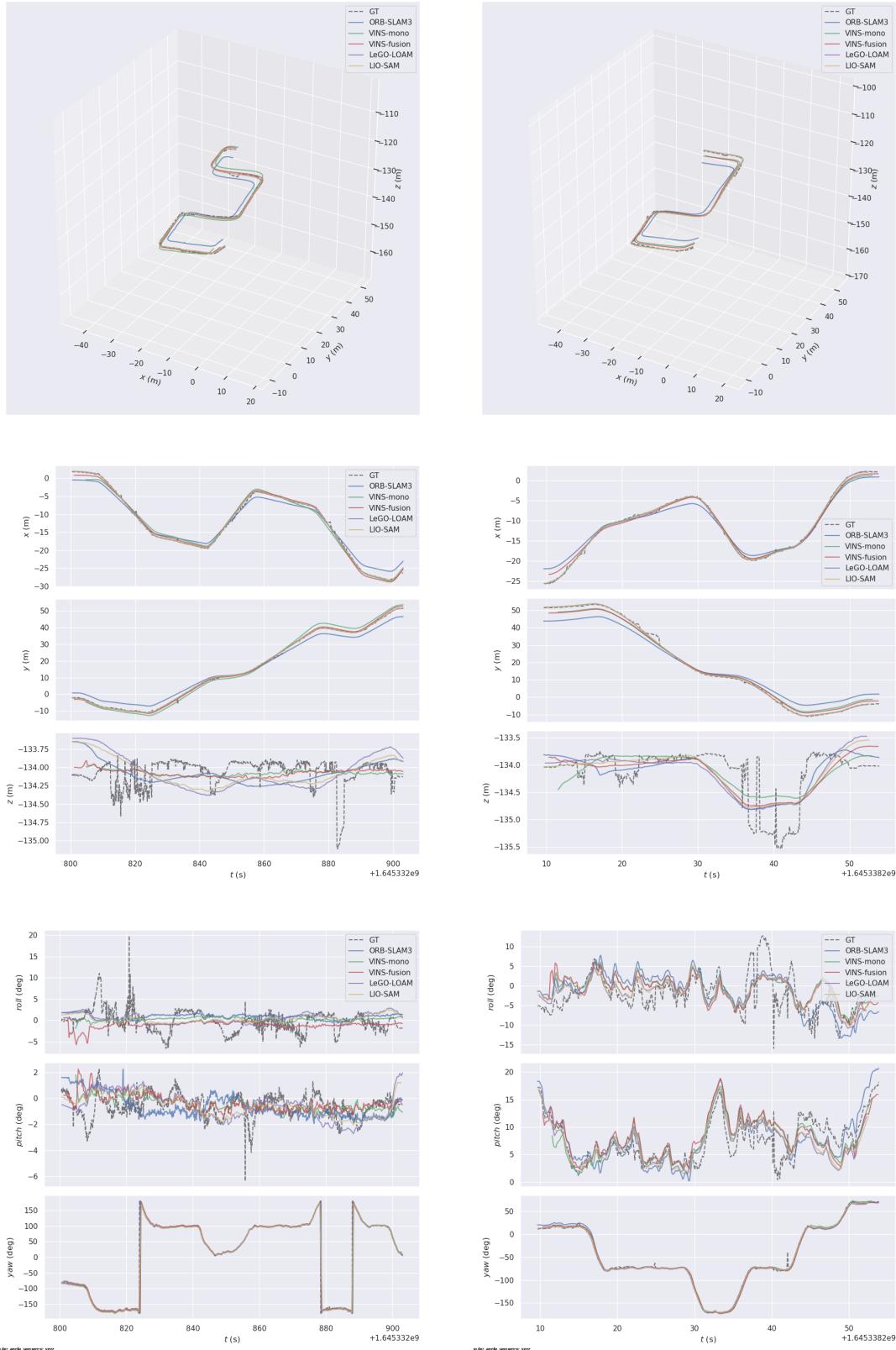
Data Sequence	ORB-SLAM3 Stereo	VINS mono	VINS fusion	LeGO-LOAM	LIO-SAM
<i>corridors-dolly</i>	✓	✓	✓	✓	✓
<i>corridors-walk</i>	✗	✓	✓	✓	✓
<i>school-dolly</i>	✓	✓	✓	✓	✓
<i>school-scooter</i>	✓	✓	✓	✓	✓
<i>units-dolly</i>	✗	✓	✓	✓	✓
<i>units-scooter</i>	✓	✓	✓	✓	✓

- **ORB-SLAM3-Stereo** takes the readings from the regular stereo camera.
- **VINS-mono** takes the readings from the left regular camera and the IMU.
- **VINS-fusion** takes the readings from the regular stereo camera and the IMU.
- **LeGO-LOAM** takes the readings from the LiDAR.
- **LIO-SAM** takes the readings from the LiDAR and the IMU.
- ✓ indicates a good result performed by this algorithm.
- ✓ indicates an average result performed by this algorithm.
- ✗ indicates an incomplete result performed by this algorithm.
- ✘ indicates no result can be generated by this algorithm.
- All trajectories are first transformed to the same reference frame as the ground truth poses by extrinsics, then further aligned with all poses by Umeyama's SE(3) method.

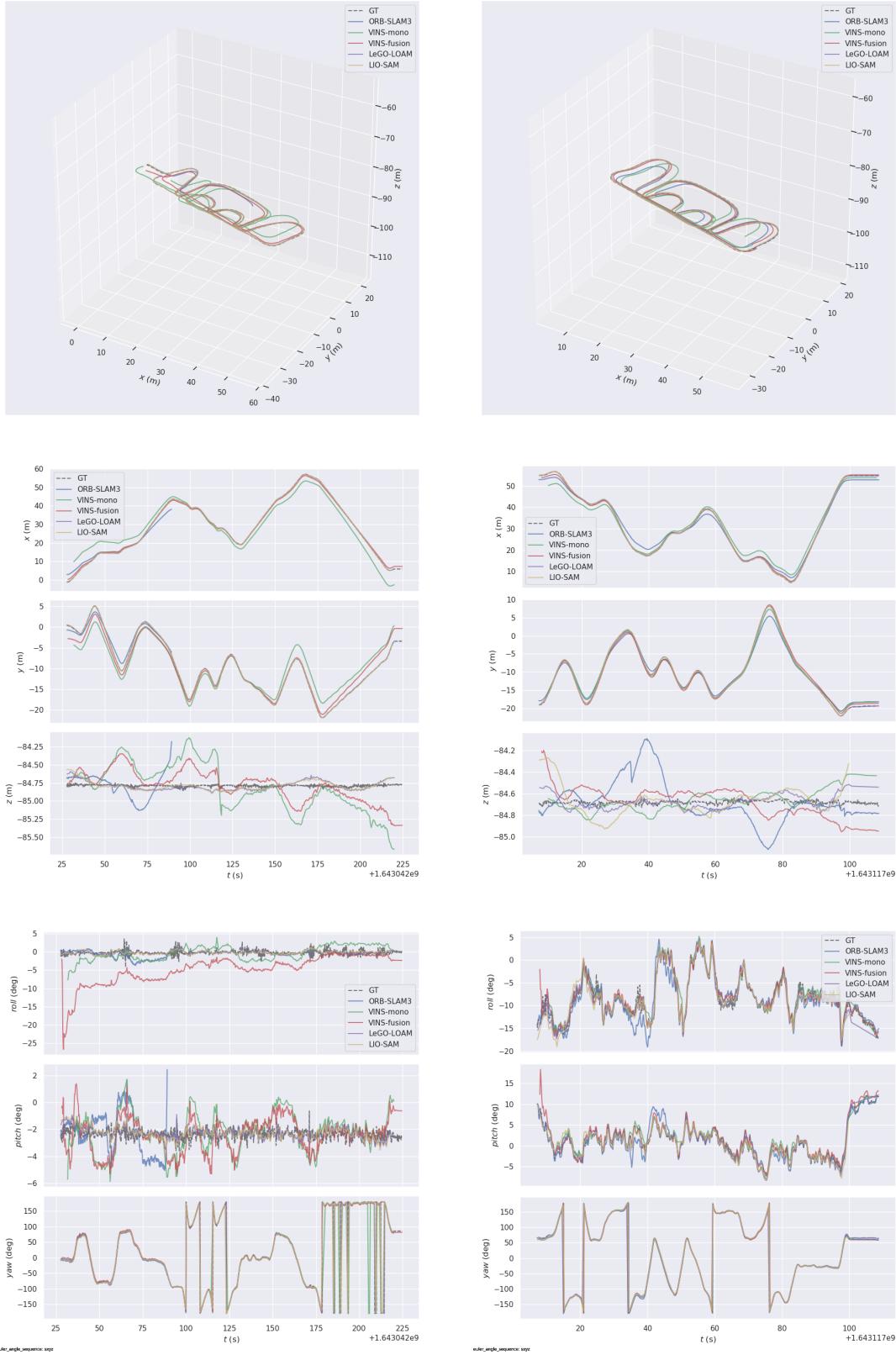
corridors-dolly (left column) and corridors-walk (right column)



school-dolly (left column) and school-scooter (right column)



units-dolly (left column) and units-scooter (right column)



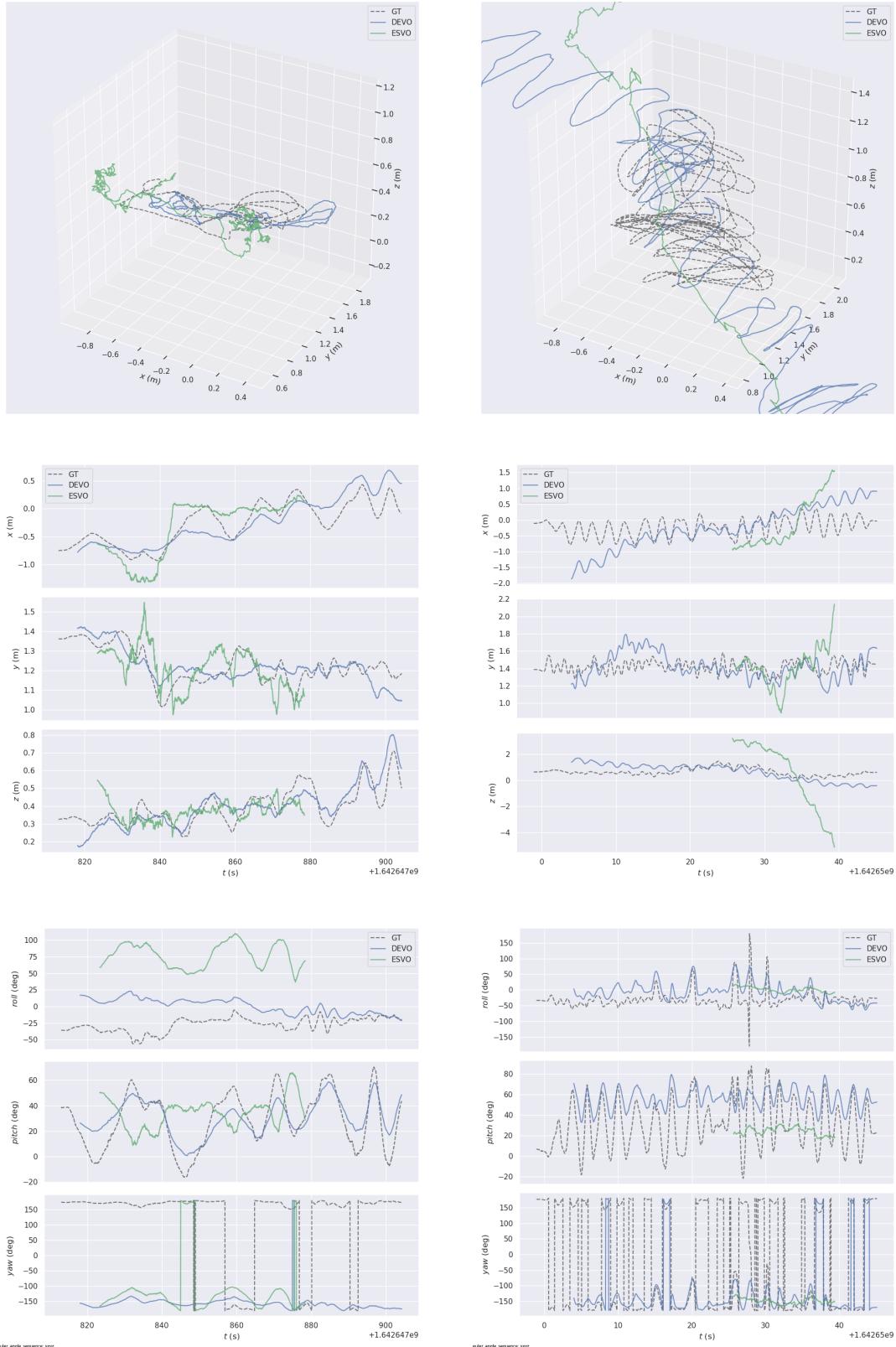
Small-scale Data Sequences

Table 3: Event-based algorithms' Performance

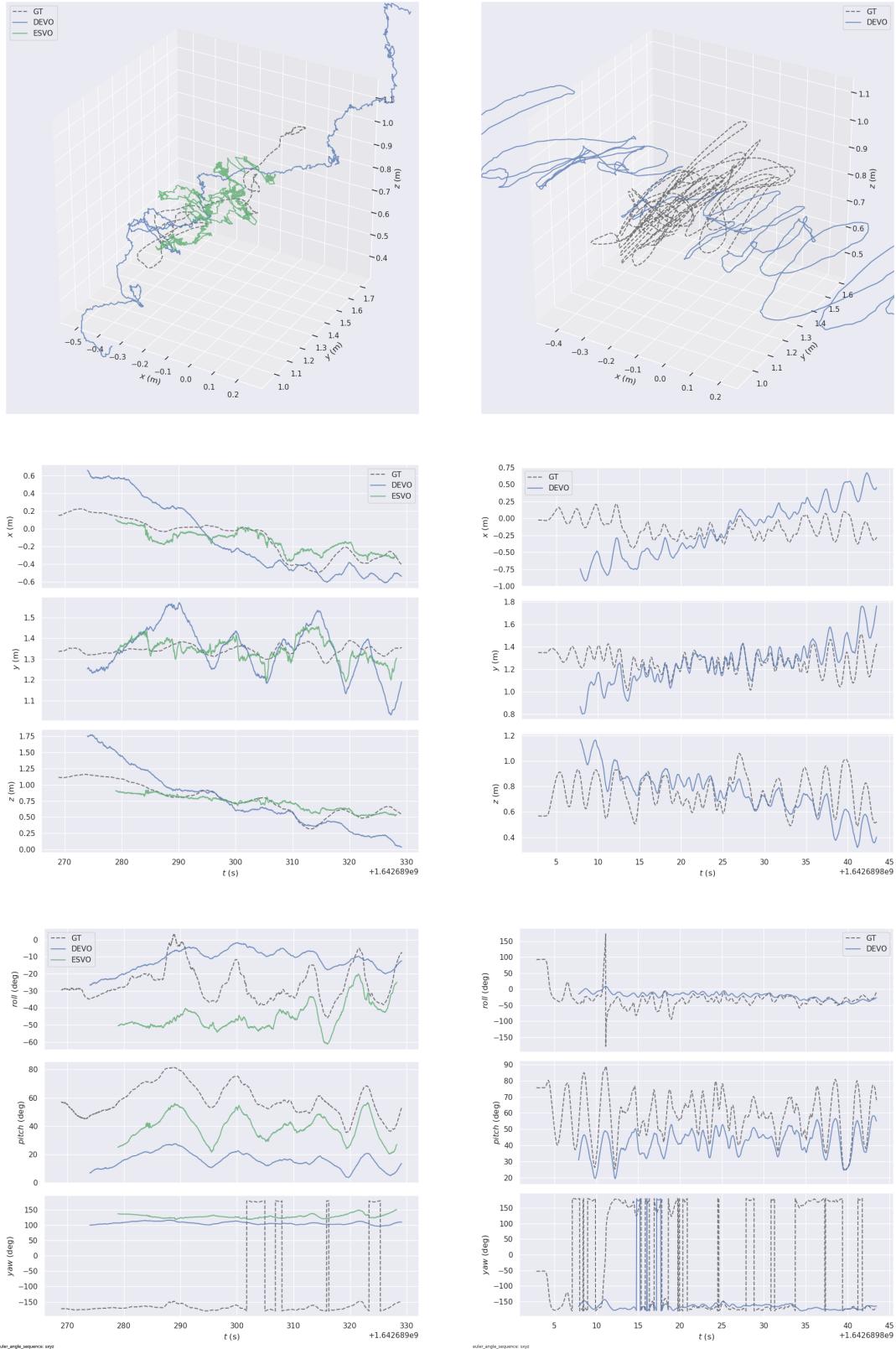
Data Sequence	DEVO	ESVO
<i>desk-normal</i>	✗	✗
<i>desk-fast</i>	✗	✗
<i>hdr-normal</i>	✗	✗
<i>hdr-fast</i>	✗	✗
<i>mountain-normal</i>	✗	✗
<i>mountain-fast</i>	✗	✗
<i>robot-normal</i>	✗	✗
<i>robot-fast</i>	✗	✗
<i>sofa-normal</i>	✗	✗
<i>sofa-fast</i>	✗	✗

- **DEVO** takes the readings from the left event camera, and the depth readings reprojected onto the left event frame.
- **ESVO** takes the readings from the event stereo camera.
- ✗ indicates a relatively poor, yet complete result performed by this algorithm.
- ✘ indicates an incomplete result performed by this algorithm.
- ✗ indicates no result can be generated by this algorithm.
- All trajectories are first transformed to the same reference frame as the ground truth poses by extrinsics, then further aligned with all poses by Umeyama's SE(3) method.

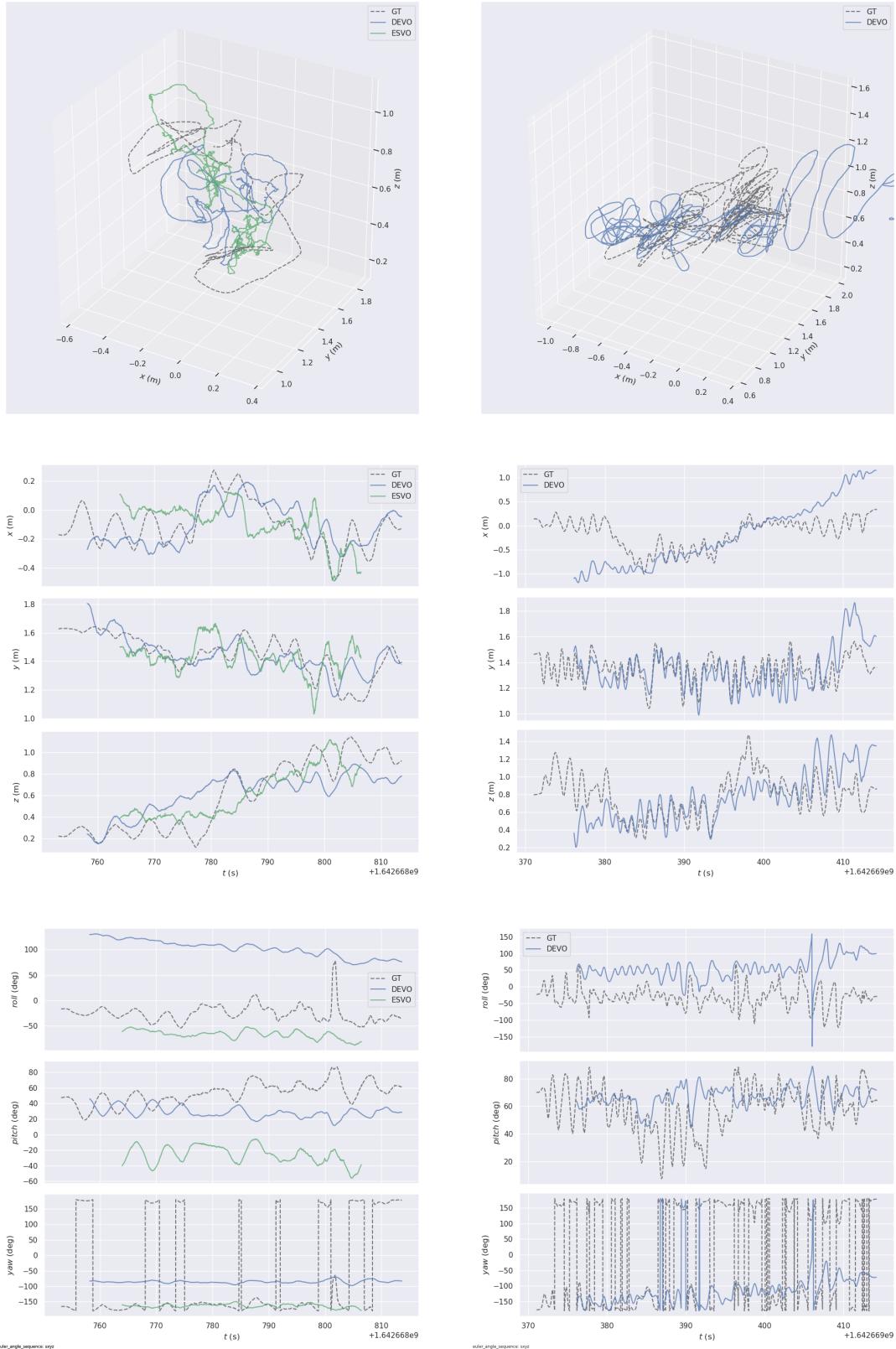
desk-normal (left column) and desk-fast (right column)



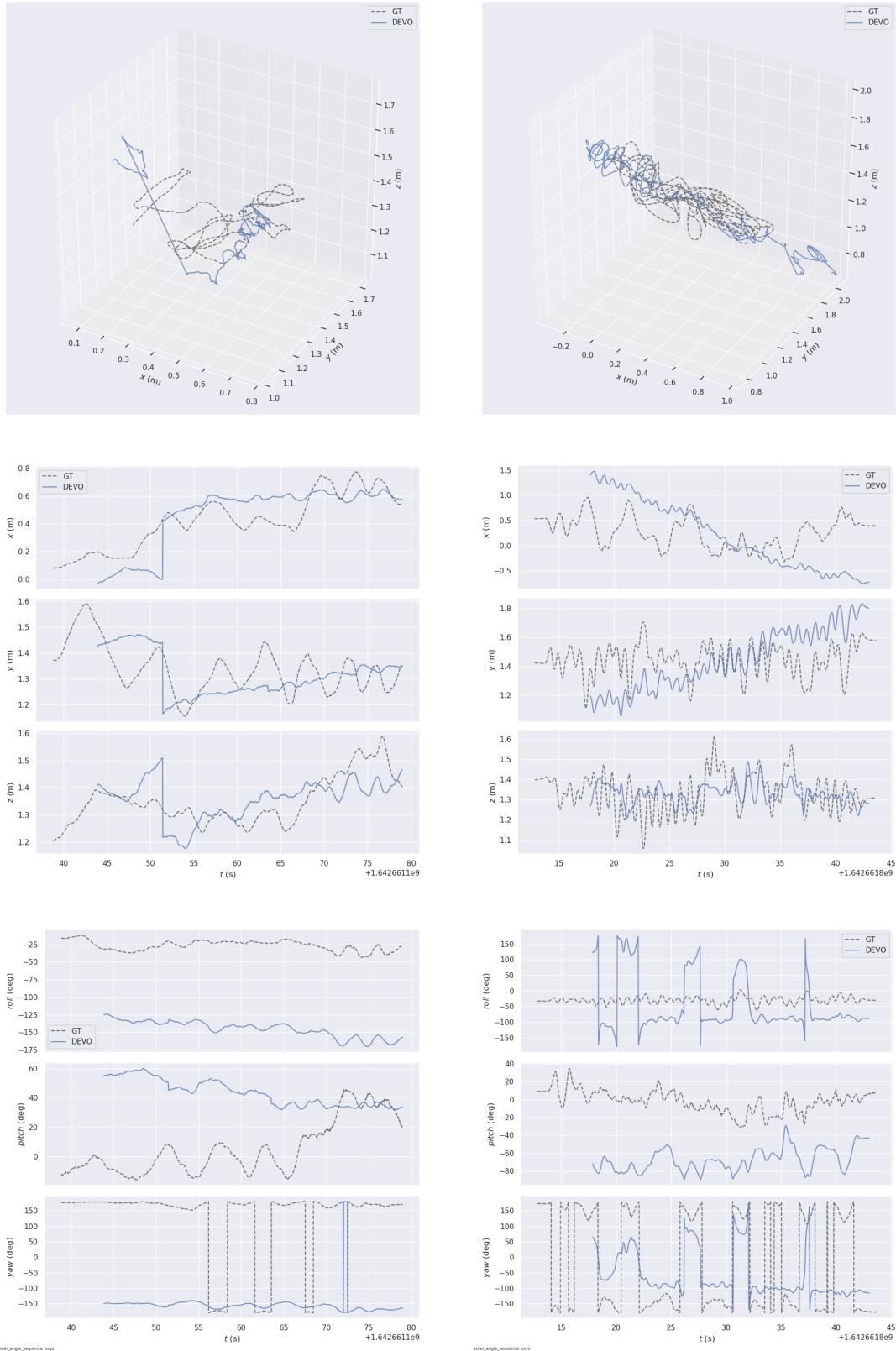
hdr-normal (left column) and hdr-fast (right column)



mountain-normal (left column) and mountain-fast (right column)



robot-normal (left column) and robot-fast (right column)



sofa-normal (left column) and sofa-fast (right column)

