

# XEst Report

Real-time vision-based navigation module

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The Works

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## Chapter 1. QuEst+

### 1.1. configs:

TID: T00001

benchmark: KITTI

del\_T: 10.1

	EightPt	Nister	Kukelova	QuEst	VEst
<b>T err mean</b>	0.1633	0.1074	0.1449	0.0736	0.4623
<b>T err std</b>	0.1259	0.1066	0.1359	0.0565	0.4036
<b>T err med</b>	0.1582	0.0631	0.0919	0.0678	0.3050
<b>T err Q1</b>	0.0593	0.0341	0.0585	0.0162	0.0983
<b>T err Q3</b>	0.2042	0.1632	0.1673	0.1263	0.9164
<b>Q err mean</b>	0.2418	0.0257	0.0289	0.0112	0.0354
<b>Q err std</b>	0.1691	0.0305	0.0319	0.0090	0.0690
<b>Q err med</b>	0.2703	0.0223	0.0257	0.0100	0.0065
<b>Q err Q1</b>	0.0464	0.0096	0.0096	0.0042	0.0018
<b>Q err Q3</b>	0.4016	0.0271	0.0343	0.0159	0.0349

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## Chapter 2. VEst+

### 2.1. configs:

TID: T00001

benchmark: KITTI

del\_T: 10.1

	VEst
T err mean	0.5197
T err std	0.4049
T err med	0.5782
T err Q1	0.1216
T err Q3	0.9164
Q err mean	0.0354
Q err std	0.0690
Q err med	0.0065
Q err Q1	0.0018
Q err Q3	0.0349

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## Chapter 3. QEKF

### 3.1. configs:

TID: T00001

benchmark: KITTI

del\_T: 10.1

	EightPt	Nister	Kukelova	QuEst	VEst
GT-X T er r mean	0.4480	0.3512	0.3637	0.2800	0.5303
GT-X T er r std	0.2989	0.2396	0.2726	0.2319	0.3613
GT-X T er r med	0.4416	0.2822	0.4532	0.1725	0.5739
GT-X T er r Q1	0.1681	0.1769	0.0706	0.0999	0.1105
GT-X T er r Q3	0.6572	0.4757	0.5172	0.4926	0.9365
GT-X Q er r mean	0.3332	0.3332	0.3332	0.3332	0.3332
GT-X Q er r std	0.0004	0.0004	0.0004	0.0004	0.0004
GT-X Q er r med	0.3331	0.3331	0.3331	0.3331	0.3331
GT-X Q er r Q1	0.3329	0.3329	0.3329	0.3329	0.3329
GT-X Q er r Q3	0.3334	0.3334	0.3334	0.3334	0.3334
GT-X V er r mean	0.5697	0.5797	0.6497	0.5222	0.6538
GT-X V er r std	0.3154	0.2904	0.2936	0.3764	0.2545
GT-X V er r med	0.5745	0.5984	0.6529	0.4616	0.6456
GT-X V er r Q1	0.3200	0.3090	0.4628	0.1515	0.4074
GT-X V er r Q3	0.8609	0.8556	0.9219	0.9168	0.8841
Z-X T L1 mean	882409772628234 696881561177649 904843064991932 90476	60453354200014 85094962823061 01153309690968 91977414	61241833355471 57588690313593 80414851723504 03006301	2406998499041 2944744602189 4064445813948 4160.0000	2377445331245 5987246881699 2810533648525 01073607790
Z-X T L1 s td	318157368118162 088957484655799 162744383050983 62320	21796766834193 98550775260691 38214181559389 63919550	22081057036657 36259405815020 21877464270738 39422595	8678556508258 2476884719463 3426913481614 9504.0000	8572001046418 4749345967935 5882528463921 04863502864
Z-X T L1 med	114757513000808. 6250	6.7327	2.8156	0.4007	2.9577

### Chapter 3. QEFK

<b>Z-X T L1 Q1</b>	1.7738	1.2452	0.8820	0.2013	2.3159
<b>Z-X T L1 Q3</b>	381682412163285 893351280929551 223966252085730 06595	24636641739185 92980168107202 9696.0000	42195551217767 10401020521349 12.0000	1031.8477	308270807.1675
<b>Z-X Q L1 mean</b>	1.4906	1.0974	1.1147	1.0446	1.1074
<b>Z-X Q L1 std</b>	0.3053	0.0921	0.1087	0.0367	0.1431
<b>Z-X Q L1 med</b>	1.6512	1.0825	1.0919	1.0406	1.0388
<b>Z-X Q L1 Q1</b>	1.1092	1.0495	1.0528	1.0155	1.0092
<b>Z-X Q L1 Q3</b>	1.7420	1.1155	1.1285	1.0630	1.1507
<b>Z-X V L1 mean</b>	115775573791755 534744048694901 002134345782989 70047	25999034293027 79475969539393 87811345437033 62459459	17880675346252 12706136074719 95529785431563 36302576	4139229983641 9215134946720 8049032624603 136.0000	1355253775912 7455354757664 0770171763348 20923629641
<b>Z-X V L1 s td</b>	417434767752439 320090828941693 576169538291035 80069	93740851256058 31361783111410 52421615160939 07213736	64469691800836 86284596565545 85293607810080 53297334	1492420594695 8908807029999 0353834123093 6064.0000	4886436980319 5874421742038 4813975793860 13261841142
<b>Z-X V L1 med</b>	10011314872527.4 609	0.5643	0.2082	0.1759	0.1388
<b>Z-X V L1 Q1</b>	0.1365	0.1231	0.1304	0.1021	0.0897
<b>Z-X V L1 Q3</b>	202580701115565 253540423902389 385793165517192 56087	73631963820115 16582781550103 363584.0000	30717216541321 91387122920954 2656.0000	102.3540	30532770.1418
<b>Z-X T L2 mean</b>	867961642872279 202751504883243 730766306581165 49045	23271453493950 82301138829781 70378928356358 88878904	31286317642940 43644971954743 07778613195613 99966522	3135401764996 7632922964382 6254455698838 85376167026	6052404994886 3029388447114 7268633912285 68812135051
<b>Z-X T L2 s td</b>	inf	inf	inf	1130485183287 6122123207508 6697321022690 82948623358	2182225654893 6930321189835 3516410836788 83119543993
<b>Z-X T L2 med</b>	997828666894180 4497180557312.00 00	22.5311	3.7213	0.0626	7.2548
<b>Z-X T L2 Q1</b>	1.6556	0.7465	0.4557	0.0300	4.0380
<b>Z-X T L2 Q3</b>	670622920215655 200660995406268 473423046809968 85975	21195256078962 76963517241068 10089158181135 10738620	11755799347973 11544717734206 31773719594597 33599426	425446.9748	4704318857078 4592.0000
<b>Z-X Q L2 mean</b>	1.0000	1.0000	1.0000	1.0000	1.0000

### Chapter 3. QEKF

<b>Z-X Q L2 std</b>	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Z-X Q L2 med</b>	1.0000	1.0000	1.0000	1.0000	1.0000
<b>Z-X Q L2 Q1</b>	1.0000	1.0000	1.0000	1.0000	1.0000
<b>Z-X Q L2 Q3</b>	1.0000	1.0000	1.0000	1.0000	1.0000
<b>Z-X V L2 mean</b>	878038947103204 706502825073915 714124006484926 30126	46706211466403 55599421202646 91457785637532 22465936	23066264267040 19663795359482 16684149165768 03707569	1515003141909 1395717654804 6840920035005 30710020736	1242758054556 9871538318207 4007721260730 70621427055
<b>Z-X V L2 s td</b>	inf	inf	inf	5462421510642 4495267547555 0846701968101 64502366831	4480827888701 0914106361628 9491759722094 23994973439
<b>Z-X V L2 med</b>	997542905852216 32675020800.0000	0.1656	0.0238	0.0225	0.0084
<b>Z-X V L2 Q1</b>	0.0174	0.0077	0.0072	0.0071	0.0051
<b>Z-X V L2 Q3</b>	320141998429172 443977658314083 414739404949426 70641	19389415772742 30483406244690 40756926000186 02891258	89337023050734 99163388403428 37842499024681 65934374	4253.7522	4739781811574 83.9375