XEst Report

Real-time vision-based navigation module

Bardia Mojra

The Works

08-Jun-2022

Table of Contents

Chapter 1. QuEst+

1.1. configs:
TID: t00001
benchmark: KITTI
del_T: 10.1

	EightPt	Nister	Kukelova	QuEst	VEst
T err mean	0.1732	0.1099	0.1361	0.0705	0.0591
T err std	0.1271	0.1035	0.1354	0.0558	0.0614
T err med	0.1698	0.0762	0.0711	0.0659	0.0282
T err Q1	0.0639	0.0349	0.0528	0.0171	0.0202
T err Q3	0.2655	0.1597	0.1635	0.1222	0.0941
Q err mean	0.2538	0.0252	0.0283	0.0111	0.0220
Q err std	0.1695	0.0295	0.0309	0.0087	0.0338
Q err med	0.2735	0.0217	0.0253	0.0094	0.0114
Q err Q1	0.0530	0.0101	0.0104	0.0046	0.0022
Q err Q3	0.4107	0.0269	0.0333	0.0159	0.0262

Chapter 2. VEst+

2.1. configs:

TID: t00001
benchmark: KITTI
del_T: 10.1

	VEst
T err mean	0.3508
T err std	0.4193
T err med	0.0875
T err Q1	0.0222
T err Q3	0.8884
Q err mean	0.0220
Q err std	0.0338
Q err med	0.0114
Q err Q1	0.0022
Q err Q3	0.0262

Chapter 3. QEKF

3.1. configs:

TID: t00001
benchmark: KITTI
del_T: 10.1

	EightPt	Nister	Kukelova	QuEst	VEst
GT-X T err mean	0.3660	0.3352	0.3729	0.2552	0.2336
GT-X T err std	0.2615	0.2153	0.2517	0.2017	0.2675
GT-X T err med	0.3918	0.3000	0.4620	0.1459	0.0978
GT-X T err Q1	0.1591	0.1327	0.0955	0.1215	0.0227
GT-X T err Q3	0.4569	0.4777	0.5331	0.4933	0.3641
GT-X Q err mean	0.3332	0.3332	0.3332	0.3332	0.3332
GT-X Q err std	0.0004	0.0004	0.0004	0.0004	0.0004
GT-X Q err med	0.3331	0.3331	0.3331	0.3331	0.3331
GT-X Q err Q1	0.3329	0.3329	0.3329	0.3329	0.3329
GT-X Q err Q3	0.3334	0.3334	0.3334	0.3334	0.3334
GT-X V err mean	0.3938	0.4181	0.4059	0.3561	0.4421
GT-X V err std	0.2991	0.2653	0.3351	0.3017	0.3724
GT-X V err med	0.4688	0.5114	0.4628	0.4070	0.5120
GT-X V err Q1	0.0782	0.1444	0.0488	0.0449	0.0328
GT-X V err Q3	0.6677	0.5568	0.5047	0.5936	0.8177
Z-X T L1 mean	10227427265372864905254120752212328275045202045590	14093651656283159251652646550708440850827618243435	18454086987427791093340608342461625942442089485964	20232505955999582374069670311423966055339583017371	13746990015689250114448989944211652135811203367526
Z-X T L1 std	38267528775175589946153458980778058577308771098709	52733615826350682546587848116072144830604047593483	69048870892678076444806083561994407205116898014424	75703105363213593236401689861458578108563766571935	51436526738111315584971685844450020752146480863641
Z-X T L1 med	263764053165713.8750	15.8956	4.1898	0.6526	0.4722

Z-X T L1 Q1	2.0148	1.4233	1.0260	0.3263	0.1145
Z-X T L1 Q3	954340835595404504636288520886790686281895699 23915	1236243601984020237342923340 33641537370998 64795670	4445567802997310248730494254 10129039291551 22364416	521763811425.9 034	758315.7876
Z-X Q L1 mean	1.5171	1.0945	1.1131	1.0445	1.0808
Z-X Q L1 std	0.3112	0.0897	0.1052	0.0354	0.0865
Z-X Q L1 med	1.6538	1.0785	1.0911	1.0407	1.0551
Z-X Q L1 Q1	1.1670	1.0504	1.0599	1.0156	1.0128
Z-X Q L1 Q3	1.7602	1.1120	1.1270	1.0629	1.1261
Z-X V L1 mean	1033225801254230882032392437117353286860719665 8317	5220953314989569994356220958 35559023814557 75123601	5630447936035855766675414311 32641147382452 76800496	78374450170927471422834258 7785489185282 50023185233	69346827374249850774949431 9502813241796 36927594496
Z-X V L1 std	3865976951468317720818494937529684049919604750 5554	1953501853703262319694034738 26592465526987 03268063	2106720711071465142568276398 73304032243071 04161370	29325034041639698884202825 7140118614732 81114182509	25947206889419919214753914 0448550495712 74511404236
Z-X V L1 med	23010485182876.2 422	1.5372	0.4466	0.2169	0.2133
Z-X V L1 Q1	0.0732	0.0500	0.0452	0.0354	0.0331
Z-X V L1 Q3	2251722214200807360149327314424704561914517608 0418	2589519496995695228972349913 75962887582264 88091738	7641661663168163206614494146 11165808590189 37683148	50807612739.99 18	75644.2771
Z-X T L2 mean	5969633315979531279235610516974221873251947581 3939	2521081652888250871266262667 36397400107411 93193491	4277390009728740518165604848 47528563330586 97743766	33998915905861885590404484 0314259788922 04348276786	10231799591762667680657345 2675997270119 52133624983
Z-X T L2 std	inf	inf	inf	12721229484147417942600371 4139049072949 53711883517	38283888522509382473012228 7044037957240 41496519868
Z-X T L2 med	26356947509605819027835322368.0 000	92.7474	7.2235	0.1714	0.1498
Z-X T L2 Q1	2.3501	1.0032	0.6941	0.0448	0.0093
Z-X T L2 Q3	7140670316609210388593763455536726098217722235 2508	1026250692520215016664753492 35194998428535 33457549	1064991280453139439987351202 23095638971815 72432763	157728254303642855669760.000 0	282434889661. 5013
Z-X Q L2 mean	1.0000	1.0000	1.0000	1.0000	1.0000

Z-X Q L2 std	0.0000	0.0000	0.0000	0.0000	0.0000
Z-X Q L2 med	1.0000	1.0000	1.0000	1.0000	1.0000
Z-X Q L2 Q1	1.0000	1.0000	1.0000	1.0000	1.0000
Z-X Q L2 Q3	1.0000	1.0000	1.0000	1.0000	1.0000
Z-X V L2 mean	732528048744638807274591800309867674348902370 54111	3780190241403241291370691582 2795189625477558465106	3268329523682068707649991435 7777574039233093795259	40245653347790146004322760 646796617850879836172411	45172623025155331800997521 413933916796748907951617
Z-X V L2 std	inf	inf	inf	15058544613430241575646914 036673182568851406938929	16902047862202708194843757 987983135971901427884202
Z-X V L2 med	263493991825466312636760064.0000	0.9164	0.1026	0.0285	0.0282
Z-X V L2 Q1	0.0024	0.0014	0.0018	0.0010	0.0011
Z-X V L2 Q3	3533047729272907313606174939796350022649610807 23926	5059443681482287921183447191 5384479619706233068084	7615360333288088861432432148 7091693434628372884249	1577218797120971866112.0000	2824370346.9740