XEst Report

Real-time vision-based navigation module

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The Works

09-Jun-2022

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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	0.3539
T err std	0.1271	0.1035	0.1354	0.0558	0.3751
T err med	0.1698	0.0762	0.0711	0.0659	0.1781
T err Q1	0.0639	0.0349	0.0528	0.0171	0.0335
T err Q3	0.2655	0.1597	0.1635	0.1222	0.7599
Q err mean	0.2538	0.0252	0.0283	0.0111	0.0241
Q err std	0.1695	0.0295	0.0309	0.0087	0.0211
Q err med	0.2735	0.0217	0.0253	0.0094	0.0218
Q err Q1	0.0530	0.0101	0.0104	0.0046	0.0051
Q err Q3	0.4107	0.0269	0.0333	0.0159	0.0374

Chapter 2. VEst+

2.1. configs:

TID: T00001
benchmark: KITTI
del_T: 10.1

	VEst
T err mean	0.6262
T err std	0.3822
T err med	0.7701
T err Q1	0.1956
T err Q3	0.9817
Q err mean	0.0241
Q err std	0.0211
Q err med	0.0218
Q err Q1	0.0051
Q err Q3	0.0374

Chapter 3. QEKF

3.1. configs:

TID: T00001
benchmark: KITTI
del_T: 10.1

	EightPt	Nister	Kukelova	QuEst	VEst
GT-X T err mean	0.4354	0.2793	0.3680	0.3229	0.4876
GT-X T err std	0.2468	0.2138	0.2796	0.2426	0.3033
GT-X T err med	0.4762	0.2185	0.4307	0.2150	0.5133
GT-X T err Q1	0.2240	0.0836	0.0923	0.1264	0.2927
GT-X T err Q3	0.6050	0.4887	0.5744	0.5594	0.6978
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	0.5787	0.5876	0.5902	0.5268	0.5556
GT-X V err std	0.2842	0.3037	0.2942	0.3103	0.2593
GT-X V err med	0.5453	0.5540	0.5510	0.4409	0.5101
GT-X V err Q1	0.4834	0.3847	0.3323	0.2721	0.3165
GT-X V err Q3	0.8220	0.8020	0.8605	0.8473	0.7307
Z-X T L1 mean	28870310795468132431645949490792823909739912075256	19647986272833276807292628089242780437918312462494	86791508162741133961674213036128472429702319275984	58934037743696983819275649060732910490530355885013	32837735114737329061840245758326104874552413724026
Z-X T L1 std	10802281164632278271797209821043042761462121900651	73516032972979627162319603394448643322398885370049	32474408762637069997503016497597831542195454372845	22051097765611789939934723488101352624865392798147	12286755415698296334369152947470893376300604033616
Z-X T L1 med	249689751393610.9688	7.8643	6.5698	0.6578	35.4107

Z-X T L1 Q1	1.8670	1.2924	1.1548	0.3138	2.0756
Z-X T L1 Q3	636664546799816262569445779757567530498545484 15083	41263418815194201484979965988843447532819761332224	877975618808483286289434659839755964482699 41604352	505910952298.0 829	12002619130148 0276505483984374543420291823 960064.0
Z-X Q L1 mean	1.5171	1.0945	1.1131	1.0445	1.0955
Z-X Q L1 std	0.3112	0.0897	0.1052	0.0354	0.0813
Z-X Q L1 med	1.6538	1.0785	1.0911	1.0407	1.0766
Z-X Q L1 Q1	1.1670	1.0504	1.0599	1.0156	1.0255
Z-X Q L1 Q3	1.7602	1.1120	1.1270	1.0629	1.1446
Z-X V L1 mean	214407610287926674308295501256506957791056973 35109	17761843382614549098438732558203501219172151715222	462020633829713735515382000299601297490401987684479	98086160826486740901891625822577160717912651065953	20917427936663553412370354054359714760390949133753
Z-X V L1 std	802239818814369346611905875795194961130198772 33065	66458732495281584672592059172389069675213503802114	172287229174109402528293199179594603945079916265993	367004808196720947227567873629642502311130994453838	78265848751528801396688000112404342257235158764280
Z-X V L1 med	21782698832217. 8867	0.6088	0.5445	0.3220	3.6090
Z-X V L1 Q1	0.2187	0.1990	0.2098	0.1307	0.2226
Z-X V L1 Q3	150569295254222745588753919887947910980845491 34755	25199440428310072107799395142161285060939300732928	108685367966096890812423866710374648190129 40595200	49263910984.23 13	12778193120100330575549180039738321212383690752.00
Z-X T L2 mean	481599030760676177792971002861253591352969729203607	41582098713614824749754767888094312262122383062998	564009518548915078242844261721418176489667 13694389	21850437938420363921167096790257700233558773601995	78743868207475140088104142958504416571661922012933
Z-X T L2 std	inf	inf	inf	81756852516536123494188508772476521917058271182058	inf
Z-X T L2 med	23619275639047734154397483008. 0000	22.3932	19.3315	0.1739	513.3602
Z-X T L2 Q1	1.9860	0.7542	0.6774	0.0424	2.6002
Z-X T L2 Q3	275008352416608700472875123976690155042914355 69644	15088472148420029789783331367906709288855229703899	533352216403784217899990272784016229693427 26165228	14828960302647391079628800000	14376781421580036572639290069426994085966900434907
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	684713682441019123147288807628544192033405437 26279	4435117868065561722470217267 80571567359282 49938566	1479976055542457347642171083 25339102599129 08461761	971549544752285813502290787225052272671 97614265837	2294419121860134678345378758 87189205392539 72998005
Z-X V L2 std	inf	inf	inf	363520553073924969012353724100247527749 51014424769	inf
Z-X V L2 med	236125120063757189247926272.00 00	0.1335	0.1345	0.0403	5.3865
Z-X V L2 Q1	0.0242	0.0177	0.0185	0.0113	0.0245
Z-X V L2 Q3	161409335261169435078874701303691341510521650 56894	7584181815740344229067727050 58517534285196 86634542	8877631185823751501007692076 88260720957922 22349624	1482836088353 602404352.0000	1597875547472009911750152742 54329956223941 58241406