XEst main

Table of Contents

init

```
close all; clear; clc
addpath(genpath('./'));

% config - datasets handled by cfg object
cfg = config_class( test_ID     = 'test_001', ...
                    benchmark   = 'TUM');
dlog = dlogger_class();
dlog.load_cfg(cfg);
quest = quest_class();
quest.load_cfg(cfg);
vest = vest_class();
vest.load_cfg(cfg);
qekf = qekf_handler_class();
qekf.load_cfg(cfg);
```

run

```
cntr  = 0;
for frame_idx = cfg.dat.keyFrames % --->> iter keyframes
  cntr = cntr+1;
  TQVW_sols = quest.get_pose(frame_idx, cfg.dat); % get pose
  TQVW_sols = vest.get_vel(cfg.dat.matches, TQVW_sols); % get velocity
  st_sols  = qekf.run_filter(TQVW_sols); % run filter
  dlog.log_state(cntr, frame_idx, TQVW_sols, st_sols);
end % for frame_idx = cfg.dats.keyFrames
```

results

```
quest_res   = quest.get_res(cfg, dlog);
vest_res    = vest.get_res(cfg, dlog);
qekf_res    = qekf.get_res(cfg, dlog);
```

TUM

	EightPt	*Nister*	*Kukelova*	*QuEst*
Tran err mean	*0.22021*	*0.30581*	*0.15831*	*0.15692*
Tran err std	*0.075288*	*0.11595*	*0.059177*	*0.076958*

Tran err median	0.20802	0.33699	0.14571	0.15662
Tran err Q_1	0.14782	0.21827	0.1171	0.087069
Tran err Q_3	0.29261	0.39336	0.19953	0.22677
Rot err mean	0.065759	0.033586	0.031964	0.016095
Rot err std	0.082624	0.026133	0.024479	0.014543
Rot err median	0.027054	0.034868	0.034785	0.012323
Rot err Q_1	0.0077886	0.0079305	0.0078698	0.004591
Rot err Q_3	0.12373	0.059242	0.056059	0.027599

TUM

	EightPt	Nister	Kukelova	QuEst
VEst Rot err mean	0.055372	0.026204	0.025497	0.017771
VEst Rot err std	0.088694	0.032867	0.031709	0.015693
VEst Rot err median	0.0049106	0.010135	0.010097	0.015796
VEst Rot err Q_1	0.0037042	0.0030315	0.0030085	0.0025304
VEst Rot err Q_3	0.10704	0.049376	0.047986	0.033011

1305031526.739478.png
1305031526.807455.png
1305031526.871446.png
1305031526.939618.png
TUM

	EightPt	Nister	Kukelova	QuEst
St Tran err mean	0.5135	0.53608	0.51635	0.50521
St Tran err std	0.16777	0.20258	0.17405	0.17242
St Tran err median	0.55634	0.54849	0.55503	0.4964
St Tran err Q_1	0.38979	0.37445	0.37621	0.37509
St Tran err Q_3	0.63721	0.69771	0.65649	0.63533

	EightPt	Nister	Kukelova	QuEst
St Rot err mean	0.34385	0.34385	0.34385	0.34385
St Rot err std	0.0016645	0.0016645	0.0016645	0.0016645
St Rot err median	0.34341	0.34341	0.34341	0.34341
St Rot err Q_1	0.34267	0.34267	0.34267	0.34267
St Rot err Q_3	0.34502	0.34502	0.34502	0.34502

	EightPt	Nister	Kukelova	QuEst
St Vel err mean	0.4565	0.42287	0.41439	0.45762
St Vel err std	0.18638	0.18723	0.19888	0.18628
St Vel err median	0.43268	0.36691	0.36136	0.4113
St Vel err Q_1	0.28343	0.26312	0.23941	0.30082
St Vel err Q_3	0.62957	0.58263	0.58937	0.61441

	EightPt	Nister	Kukelova	QuEst

St Tran L1 mean	3.0729e+05	2.158e+05	1.7632e+05	1.5955e+05
St Tran L1 std	5.322e+05	3.7375e+05	3.0536e+05	2.7632e+05
St Tran L1 median	34.33	27.888	22.679	21.053
St Tran L1 Q_1	3.8155	5.9986	4.065	3.0165
St Tran L1 Q_3	6.1458e+05	4.316e+05	3.5263e+05	3.191e+05

	EightPt	Nister	Kukelova	QuEst
St Rot L1 mean	1.6654	1.5565	1.5585	1.6483
St Rot L1 std	0.16584	0.0441	0.045903	0.03413
St Rot L1 median	1.5758	1.577	1.5768	1.6449
St Rot L1 Q_1	1.5631	1.5255	1.5254	1.6177
St Rot L1 Q_3	1.7676	1.5875	1.5916	1.679

	EightPt	Nister	Kukelova	QuEst
St Vel L1 mean	32508	22983	18795	19406
St Vel L1 std	56298	39800	32546	33607
St Vel L1 median	6.8445	7.216	6.1591	4.1651
St Vel L1 Q_1	0.37634	0.27355	0.33689	0.23077
St Vel L1 Q_3	65016	45966	37589	38811

	EightPt	Nister	Kukelova	QuEst
St Tran L2 mean	1.5997e+11	7.981e+10	5.3281e+10	5.2303e+10
St Tran L2 std	2.7708e+11	1.3824e+11	9.2285e+10	9.0591e+10
St Tran L2 median	1456.7	839.55	546.86	391.02
St Tran L2 Q_1	8.5905	13.792	8.4873	4.3229
St Tran L2 Q_3	3.1994e+11	1.5962e+11	1.0656e+11	1.0461e+11

	EightPt	Nister	Kukelova	QuEst
St Rot L2 mean	1	1	1	1
St Rot L2 std	1.6653e-16	1.3597e-16	1.923e-16	2.7756e-16
St Rot L2 median	1	1	1	1
St Rot L2 Q_1	1	1	1	1
St Rot L2 Q_3	1	1	1	1

	EightPt	Nister	Kukelova	QuEst
St Vel L2 mean	1.8256e+09	9.1559e+08	6.1228e+08	5.9666e+08
St Vel L2 std	3.1621e+09	1.5859e+09	1.0605e+09	1.0334e+09
St Vel L2 median	31.506	32.57	22.908	12.285
St Vel L2 Q_1	0.11444	0.05764	0.088867	0.04155
St Vel L2 Q_3	3.6512e+09	1.8312e+09	1.2246e+09	1.1933e+09

Published with MATLAB® R2022a