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);
```

Pose estimation module (QuEst+):
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

VEst module:
Here, we compare Q_VEst (exp_map(W)) for each frame with the Q_est of each method for the same frame.
TUM

	EightPt	Nister	Kukelova	QuEst
exp(W) err mean	0.053578	0.025994	0.02517	0.016695
exp(W) err std	0.086789	0.032073	0.030718	0.014244
exp(W) err median	0.0040209	0.010582	0.010559	0.014136
exp(W) err Q_1	0.003122	0.003602	0.0035781	0.0039657
exp(W) err Q_3	0.10403	0.048385	0.046761	0.029424

1305031526.739478.png
1305031526.807455.png
1305031526.871446.png
1305031526.939618.png
QEKF module:
TUM

	EightPt	Nister	Kukelova	QuEst
GT-X T err mean	0.51358	0.53623	0.51647	0.50538
GT-X T err std	0.16785	0.20275	0.17416	0.17257
GT-X T err median	0.55638	0.54854	0.55513	0.49653
GT-X T err Q_1	0.38978	0.37444	0.37619	0.37522
GT-X T err Q_3	0.63738	0.69803	0.65675	0.63554

	EightPt	Nister	Kukelova	QuEst
GT-X Q err mean	0.34385	0.34385	0.34385	0.34385
GT-X Q err std	0.0016645	0.0016645	0.0016645	0.0016645
GT-X Q err median	0.34341	0.34341	0.34341	0.34341
GT-X Q err Q_1	0.34267	0.34267	0.34267	0.34267
GT-X Q err Q_3	0.34502	0.34502	0.34502	0.34502

	EightPt	Nister	Kukelova	QuEst
GT-X V err mean	0.45678	0.42325	0.41455	0.4581
GT-X V err std	0.18598	0.18689	0.19863	0.18571
GT-X V err median	0.43258	0.36773	0.3618	0.41114

GT-X V err Q_1	0.28409	0.26409	0.24006	0.30188
GT-X V err Q_3	0.62946	0.58241	0.58904	0.61433

	EightPt	Nister	Kukelova	QuEst
Z-XH T L1 mean	3.0639e+05	2.1499e+05	1.7546e+05	1.5851e+05
Z-XH T L1 std	5.3064e+05	3.7233e+05	3.0389e+05	2.7452e+05
Z-XH T L1 median	34.235	27.806	22.595	20.946
Z-XH T L1 Q_1	3.8147	5.9978	4.0642	3.0158
Z-XH T L1 Q_3	6.1278e+05	4.2997e+05	3.5093e+05	3.1702e+05

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

	EightPt	Nister	Kukelova	QuEst
Z-XH V L1 mean	32413	22897	18705	19280
Z-XH V L1 std	56134	39650	32390	33388
Z-XH V L1 median	6.8739	7.2456	6.1886	4.2012
Z-XH V L1 Q_1	0.37614	0.27335	0.33668	0.23057
Z-XH V L1 Q_3	64827	45794	37409	38559

	EightPt	Nister	Kukelova	QuEst
Z-XH T L2 mean	1.5903e+11	7.9207e+10	5.2767e+10	5.1624e+10
Z-XH T L2 std	2.7546e+11	1.3719e+11	9.1395e+10	8.9415e+10
Z-XH T L2 median	1448.7	833.82	542.17	386.4
Z-XH T L2 Q_1	8.5747	13.779	8.478	4.3143
Z-XH T L2 Q_3	3.1807e+11	1.5841e+11	1.0553e+11	1.0325e+11

	EightPt	Nister	Kukelova	QuEst
Z-XH Q L2 mean	1	1	1	1
Z-XH Q L2 std	9.6148e-17	3.1889e-16	1.5701e-16	2.7195e-16
Z-XH Q L2 median	1	1	1	1
Z-XH Q L2 Q_1	1	1	1	1
Z-XH Q L2 Q_3	1	1	1	1

	EightPt	Nister	Kukelova	QuEst
Z-XH V L2 mean	1.815e+09	9.0875e+08	6.0645e+08	5.8897e+08
Z-XH V L2 std	3.1437e+09	1.574e+09	1.0504e+09	1.0201e+09
Z-XH V L2 median	31.478	32.759	23.124	12.279

```
    Z-XH V L2 Q_1          0.11667      0.058828      0.090598      0.042773
    Z-XH V L2 Q_3       3.6301e+09    1.8175e+09    1.2129e+09    1.1779e+09
```

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