XEst main

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init

```
close all; clear; clc; addpath(genpath('./'));
cfg = config_class( test_ID     = 'test_001', ... % --->> config
                    benchmark   = 'KITTI');
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);
```

todo: keep track features for x number of frames

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
```

results

```
quest_res   = quest.get_res(cfg, dlog);
vest_res    = vest.get_res(cfg, dlog);
qekf_res    = qekf.get_res(cfg, dlog);
disp("end of process...");
```

```
Pose estimation module (QuEst+):
KITTI
                   EightPt       Nister       Kukelova       QuEst        VEst

                  _________    __________    __________    _________
 _________
```

T err mean	0.049233	0.13449	0.14946	0.061282	0.033637
T err std	0.048413	0.11632	0.13914	0.065601	0.041043
T err med	0.014529	0.049237	0.053502	0.011805	0.010817
T err Q1	0.01076	0.040477	0.032613	0.0073206	0.0086031
T err Q3	0.094997	0.26048	0.30012	0.13456	0.049467
Q err mean	0.06361	0.0059552	0.013913	0.003214	0.0039766
Q err std	0.091232	0.0069446	0.018129	0.0031175	0.0056828
Q err med	0.0029372	0.0020042	0.0020599	0.0013304	0.0011956
Q err Q1	0.0022136	0.00088513	0.00083714	0.0007197	0.0010768
Q err Q3	0.11534	0.010447	0.025988	0.0059129	0.0048964

VEst module:
Since VEst outputs V and W, we compute the integral of the two and compute the error with respect to the ground truth for each frame
KITTI

	VEst
T err mean	0.38359
T err std	0.45346
T err med	0.027858
T err Q1	0.0086031
T err Q3	0.91158
Q err mean	0.00398
Q err std	0.0056812
Q err med	0.0011995
Q err Q1	0.0010815
Q err Q3	0.0048986

XEst module:
KITTI

	EightPt	Nister	Kukelova	QuEst	VEst
GT-X T err mean	0.060063	0.14379	0.19526	0.078184	0.040515
GT-X T err std	0.062757	0.12999	0.16079	0.085561	0.044528
GT-X T err med	0.019327	0.049277	0.17339	0.013339	0.016138
GT-X T err Q1	0.010443	0.037757	0.022824	0.0073372	0.011

GT-X T err Q3	0.11178	0.27189	0.36668	0.17596	0.062952
GT-X Q err mean	0.3334	0.3334	0.3334	0.3334	0.3334
GT-X Q err std	0.00068932	0.00068932	0.00068932	0.00068932	0.00068932
GT-X Q err med	0.33352	0.33352	0.33352	0.33352	0.33352
GT-X Q err Q1	0.33262	0.33262	0.33262	0.33262	0.33262
GT-X Q err Q3	0.33413	0.33413	0.33413	0.33413	0.33413
GT-X V err mean	0.3778	0.4316	0.45039	0.37307	0.37938
GT-X V err std	0.45025	0.41697	0.37874	0.44277	0.45253
GT-X V err med	0.022108	0.17376	0.22908	0.022813	0.017723
GT-X V err Q1	0.0071222	0.082572	0.16083	0.0083209	0.0085052
GT-X V err Q3	0.89369	0.91127	0.87721	0.88802	0.90541
Z-X T L1 mean	0.45873	1.0576	1.3641	0.59164	0.34661
Z-X T L1 std	0.3954	0.8345	0.5464	0.49965	0.36148
Z-X T L1 med	0.31865	0.82131	1.3703	0.62273	0.13486
Z-X T L1 Q1	0.070969	0.25953	0.96935	0.032841	0.10294
Z-X T L1 Q3	0.86581	1.9449	1.7101	1.0789	0.54077
Z-X Q L1 mean	1.1693	1.033	1.0719	1.0158	1.0161
Z-X Q L1 std	0.22947	0.035738	0.09182	0.013733	0.018354
Z-X Q L1 med	1.0152	1.0108	1.0108	1.007	1.007
Z-X Q L1 Q1	1.0107	1.0056	1.0054	1.0051	1.0061
Z-X Q L1 Q3	1.3101	1.0591	1.1331	1.0268	1.0198
Z-X V L1 mean	0.068064	0.081164	0.087176	0.071775	0.067229
Z-X V L1 std	0.067195	0.068876	0.080375	0.068398	0.068386
Z-X V L1 med	0.050729	0.050729	0.065074	0.050729	0.050729
Z-X V L1 Q1	0.0092973	0.037342	0.040695	0.0093409	0.0087343
Z-X V L1 Q3	0.11032	0.1197	0.11074	0.12411	0.1075
Z-X T L2 mean	0.33441	0.732	1.3247	0.3981	0.22535

```
    Z-X T L2 std          0.39733          0.7806         0.92356         0.43095
     0.3889
    Z-X T L2 med         0.084361         0.36066          1.1564         0.15455
   0.015616
    Z-X T L2 Q1        0.0022348        0.027291         0.81789      0.00052965
  0.0073825
    Z-X T L2 Q3          0.68757          1.4442          1.6309          0.8762
    0.32426
    Z-X Q L2 mean              1               1               1               1
           1
    Z-X Q L2 std       1.7902e-16      3.2177e-16       1.986e-16      1.4895e-16
 1.5701e-16
    Z-X Q L2 med               1               1               1               1
           1
    Z-X Q L2 Q1                1               1               1               1
           1
    Z-X Q L2 Q3                1               1               1               1
           1
    Z-X V L2 mean        0.0082687       0.0078851       0.0088021       0.0084661
  0.0081715
    Z-X V L2 std          0.013345        0.011981         0.01408        0.013277
   0.013411
    Z-X V L2 med         0.0023891       0.0023891       0.0023891       0.0023891
  0.0023891
    Z-X V L2 Q1        4.1189e-05      0.00072905        0.001696      4.2408e-05
 3.9979e-05
    Z-X V L2 Q3          0.011779        0.011192        0.011042        0.012529
   0.011382

end of process...
```

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