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# XEst main

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## init

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

% config - datasets handled by cfg object
cfg = config_class( test_ID      = 'test_001', ...
                   benchmark    = 'KITTI' );
dlog = dlogger_class();
dlog.load_cfg(cfg);
quest = quest_class();
quest.load_cfg(cfg);
vest = vest_class();
vest.load_cfg(cfg);
gekf = gekf_handler_class();
gekf.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 = gekf.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);
gekf_res  = gekf.get_res(cfg, dlog);
```

*KITTI*

	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>Tran err mean</i>	0.049233	0.13449	0.14946	0.061282
<i>Tran err std</i>	0.048413	0.11632	0.13914	0.065601

<i>Tran err median</i>	0.014529	0.049237	0.053502	0.011805
<i>Tran err Q_1</i>	0.01076	0.040477	0.032613	0.0073206
<i>Tran err Q_3</i>	0.094997	0.26048	0.30012	0.13456
<i>Rot err mean</i>	0.06361	0.0059552	0.013913	0.003214
<i>Rot err std</i>	0.091232	0.0069446	0.018129	0.0031175
<i>Rot err median</i>	0.0029372	0.0020042	0.0020599	0.0013304
<i>Rot err Q_1</i>	0.0022136	0.00088513	0.00083714	0.0007197
<i>Rot err Q_3</i>	0.11534	0.010447	0.025988	0.0059129

KITTI

	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>VEst Rot err mean</i>	0.066709	0.0076724	0.016547	0.0047445
<i>VEst Rot err std</i>	0.092587	0.0066164	0.019796	0.003984
<i>VEst Rot err median</i>	0.0094744	0.0069642	0.0069952	0.0031294
<i>VEst Rot err Q_1</i>	0.002233	0.0017459	0.0018046	0.0012517
<i>VEst Rot err Q_3</i>	0.11909	0.011913	0.027747	0.0079486

KITTI

	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Tran err mean</i>	0.05785	0.14387	0.19564	0.078419
<i>St Tran err std</i>	0.058946	0.13014	0.16113	0.085817
<i>St Tran err median</i>	0.019484	0.049556	0.17384	0.013329
<i>St Tran err Q_1</i>	0.010382	0.037648	0.022832	0.0075022
<i>St Tran err Q_3</i>	0.10894	0.27199	0.36719	0.17602

	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Rot err mean</i>	0.3334	0.3334	0.3334	0.3334
<i>St Rot err std</i>	0.00068932	0.00068932	0.00068932	0.00068932
<i>St Rot err median</i>	0.33352	0.33352	0.33352	0.33352
<i>St Rot err Q_1</i>	0.33262	0.33262	0.33262	0.33262
<i>St Rot err Q_3</i>	0.33413	0.33413	0.33413	0.33413

	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Vel err mean</i>	0.59018	0.63575	0.66291	0.58227
<i>St Vel err std</i>	0.45304	0.40027	0.33323	0.44824
<i>St Vel err median</i>	0.91524	0.93241	0.88274	0.89849
<i>St Vel err Q_1</i>	0.042391	0.18634	0.31514	0.040573
<i>St Vel err Q_3</i>	0.97299	0.96618	0.92672	0.95838

	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Tran L1 mean</i>	0.4585	1.0581	1.3652	0.59183
<i>St Tran L1 std</i>	0.39503	0.83498	0.54639	0.49861
<i>St Tran L1 median</i>	0.31878	0.82138	1.3704	0.62136
<i>St Tran L1 Q_1</i>	0.071094	0.25837	0.97003	0.033714

<i>St Tran L1 Q_3</i>	0.86459	1.947	1.7107	1.0787
	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Rot L1 mean</i>	1.1693	1.033	1.0719	1.0158
<i>St Rot L1 std</i>	0.22947	0.035738	0.09182	0.013733
<i>St Rot L1 median</i>	1.0152	1.0108	1.0108	1.007
<i>St Rot L1 Q_1</i>	1.0107	1.0056	1.0054	1.0051
<i>St Rot L1 Q_3</i>	1.3101	1.0591	1.1331	1.0268
	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Vel L1 mean</i>	0.08432	0.084168	0.10307	0.087742
<i>St Vel L1 std</i>	0.061791	0.057652	0.083385	0.061371
<i>St Vel L1 median</i>	0.070407	0.077364	0.064362	0.080503
<i>St Vel L1 Q_1</i>	0.038343	0.037463	0.038351	0.038336
<i>St Vel L1 Q_3</i>	0.11196	0.1125	0.16023	0.11733
	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Tran L2 mean</i>	0.33437	0.73247	1.3248	0.39769
<i>St Tran L2 std</i>	0.39735	0.78104	0.92359	0.43063
<i>St Tran L2 median</i>	0.084191	0.3607	1.1552	0.1542
<i>St Tran L2 Q_1</i>	0.0022254	0.026907	0.81818	0.00054551
<i>St Tran L2 Q_3</i>	0.68755	1.4463	1.6311	0.87491
	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Rot L2 mean</i>	1	1	1	1
<i>St Rot L2 std</i>	2.5317e-16	2.3288e-16	4.9651e-17	1.1102e-16
<i>St Rot L2 median</i>	1	1	1	1
<i>St Rot L2 Q_1</i>	1	1	1	1
<i>St Rot L2 Q_3</i>	1	1	1	1
	<i>EightPt</i>	<i>Nister</i>	<i>Kukelova</i>	<i>QuEst</i>
<i>St Vel L2 mean</i>	0.0085916	0.0076987	0.0097063	0.0087716
<i>St Vel L2 std</i>	0.012501	0.011078	0.013781	0.012394
<i>St Vel L2 median</i>	0.0018825	0.0023049	0.0018742	0.0028264
<i>St Vel L2 Q_1</i>	0.0013589	0.0013562	0.0013588	0.0013589
<i>St Vel L2 Q_3</i>	0.012461	0.010623	0.014921	0.012442