Calibration results
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Normalized Residuals

Reprojection error (cam0): mean 1.28410974596, median 0.991081641556, std: 1.0652242405
Reprojection error (cam1): mean 1.52589694919, median 1.07104577365, std: 1.40886578707
Gyroscope error (imu0): mean 8.75236132124, median 5.19689911695, std: 9.79372026184
Accelerometer error (imu0): mean 5.52726780341, median 3.70167970602, std: 5.55659112497

Residuals

Reprojection error (cam0) [px]: mean 1.28410974596, median 0.991081641556, std: 1.0652242405
Reprojection error (cam1) [px]: mean 1.52589694919, median 1.07104577365, std: 1.40886578707
Gyroscope error (imu0) [rad/s]: mean 0.163669156707, median 0.0971820134869, std: 0.183142568896
Accelerometer error (imu0) [m/s^2]: mean 1.02807181143, median 0.68851242532, std: 1.03352594924

Transformation (cam0):

T_ci: (imu0 to cam0):
[[0.01082671 -0.99527677 -0.09647246 0.0401812]
 [-0.1095508   0.09471675 -0.98945811 -0.01424731]
 [0.99392223 0.02128121 -0.1080079 -0.06661114]
 [0.   0.   0.   1.   ]]

T_ic: (cam0 to imu0):
[[0.01082671 -0.1095508   0.99392223 0.06421046]
 [-0.99527677 0.09471675 0.02128121 0.04275844]
 [-0.09647246 -0.98945811 -0.1080079 -0.01741527]
 [0.   0.   0.   1.   ]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
-0.0427128814704

Transformation (cam1):

T_ci: (imu0 to cam1):

```
 [ 0.          0.          0.          1.        ]]

T_ic:  (cam1 to imu0):
[[ 0.00272049 -0.10259825  0.99471916  0.06460577]
 [-0.99467258  0.1022278   0.01326444 -0.03199332]
 [-0.10304886 -0.98945595 -0.10177355 -0.02343053]
 [ 0.          0.          0.          1.        ]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
-0.0469552426332

Baselines:
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Baseline (cam0 to cam1):
[[ 0.99994534  0.00745234 -0.00733379 -0.07497447]
 [-0.0074005   0.99994762  0.00706991  0.00173043]
 [ 0.00738609 -0.00701525  0.99994811 -0.00001388]
 [ 0.          0.          0.          1.        ]]
baseline norm:  0.0749944397342 [m]


Gravity vector in target coords: [m/s^2]
[ 0.11650358 -8.98399315 -3.92972223]


Calibration configuration
=========================

cam0
-----
  Camera model: pinhole
  Focal length: [421.5669029808091, 419.9735018071812]
  Principal point: [316.11296529792736, 199.00943931140193]
  Distortion model: radtan
  Distortion coefficients: [0.07644672366773358, -0.11379626861839984, 0.0008189670995508705, 0.0002
  Type: aprilgrid
  Tags:
```
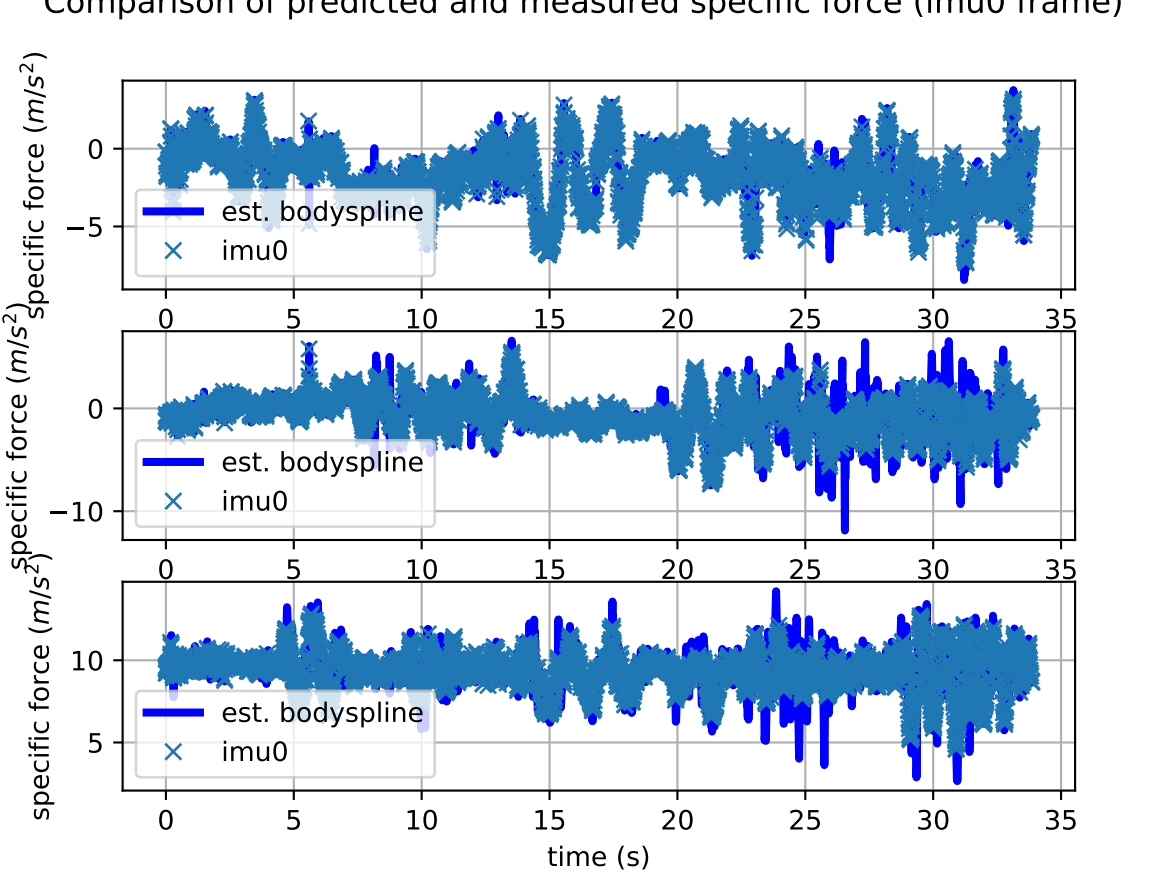
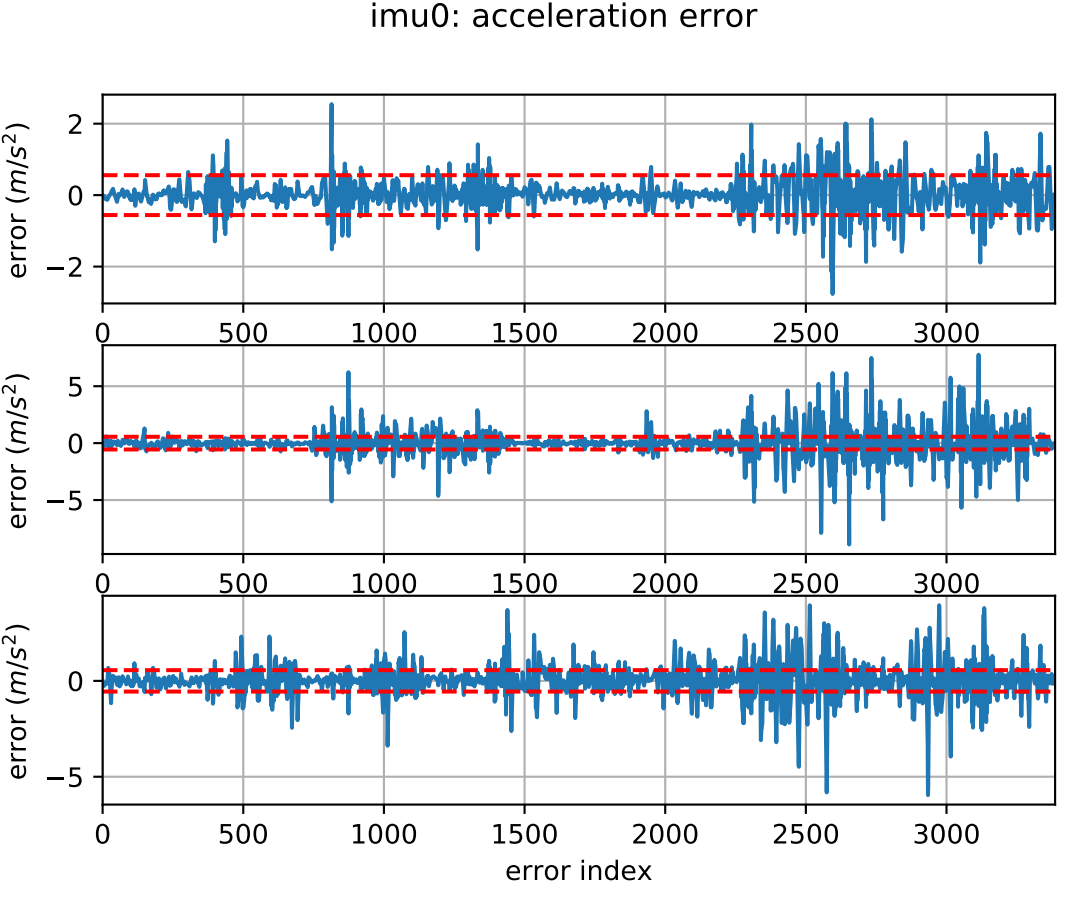
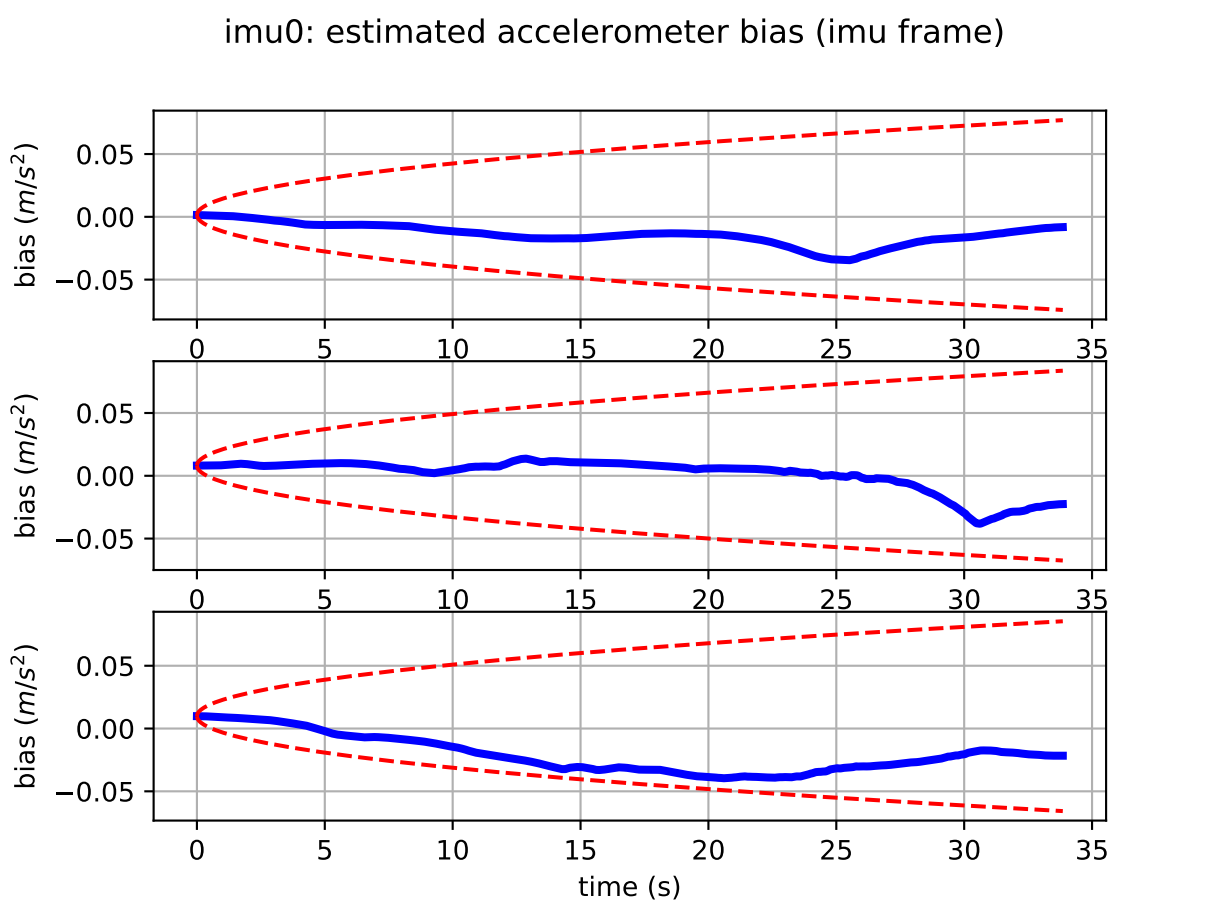
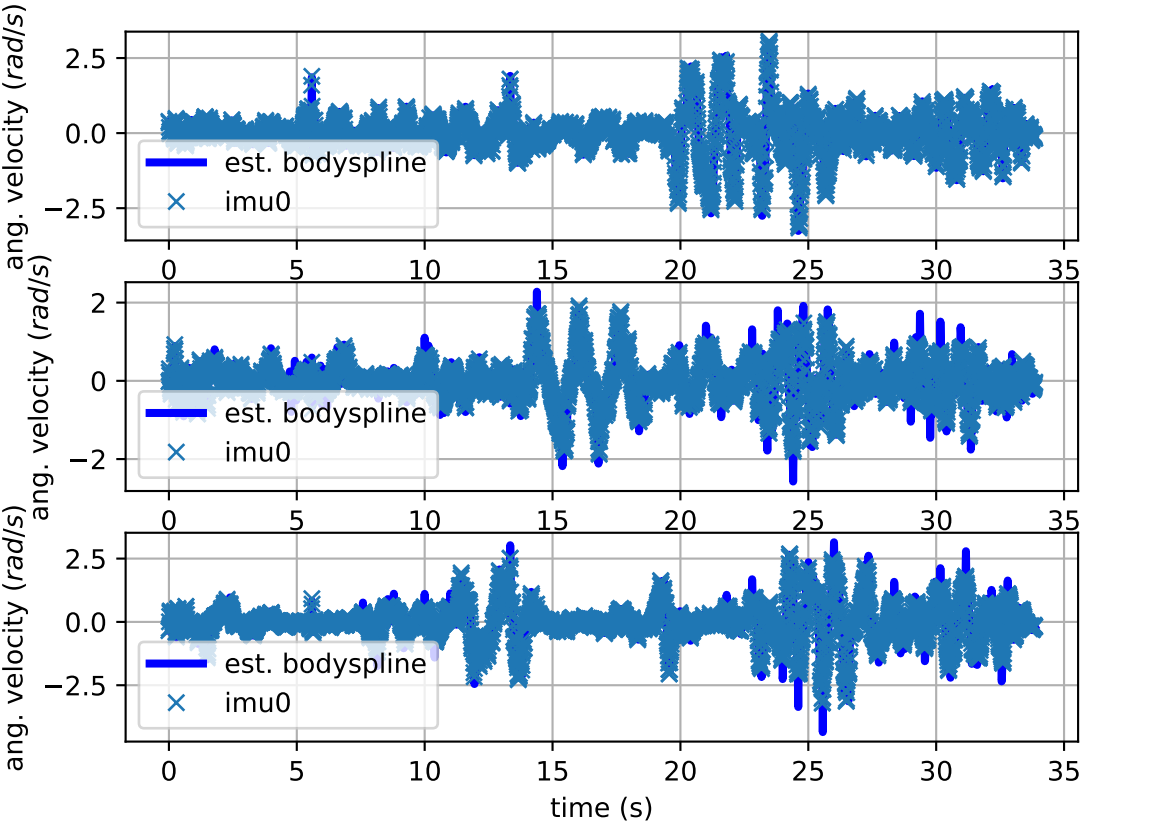
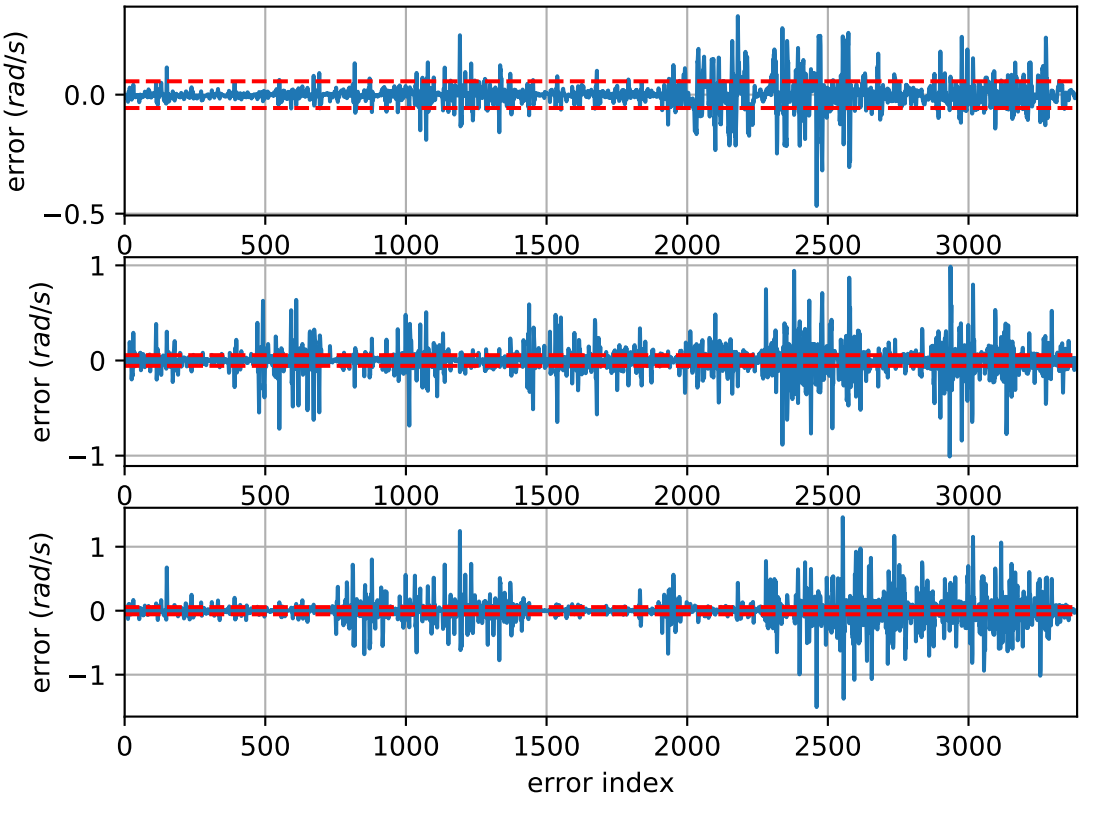

```
    Spacing 0.0066 [m]


cam1
-----
  Camera model: pinhole
  Focal length: [423.73924721507734, 422.2169242295692]
  Principal point: [317.56464593849574, 198.7006786616447]
  Distortion model: radtan
  Distortion coefficients: [0.07295454286203246, -0.11362362644847068, -0.0003364900885894738, -0.000
  Type: aprilgrid
  Tags:
    Rows: 6
    Cols: 6
    Size: 0.022 [m]
    Spacing 0.0066 [m]



IMU configuration
==================

IMU0:
----------------------------
  Model: calibrated
  Update rate: 100.0
  Accelerometer:
    Noise density: 0.0186
    Noise density (discrete): 0.186
    Random walk: 0.00433
  Gyroscope:
    Noise density: 0.00187
    Noise density (discrete): 0.0187
    Random walk: 0.000266
  T_i_b
    [[ 1.  0.  0.  0.]
     [ 0.  1.  0.  0.]
```

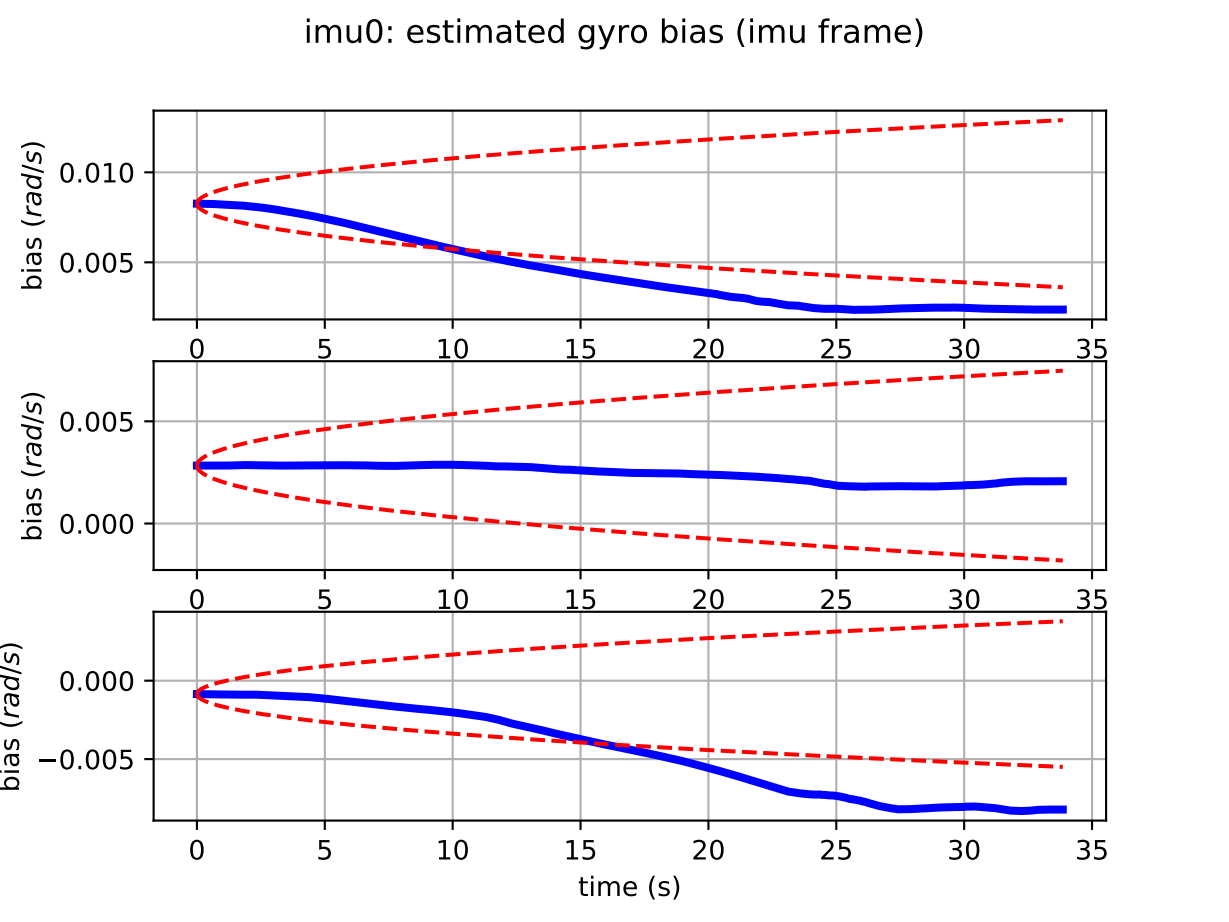

Comparison of predicted and measured specific force (imu0 frame)
specific force (m/s^2)
est. bodyspline
imu0
0
−5
0
5
10
15
20
25
30
35
specific force (m/s^2)
est. bodyspline
imu0
0
−10
specific force (m/s^2)
est. bodyspline
imu0
10
5
time (s)

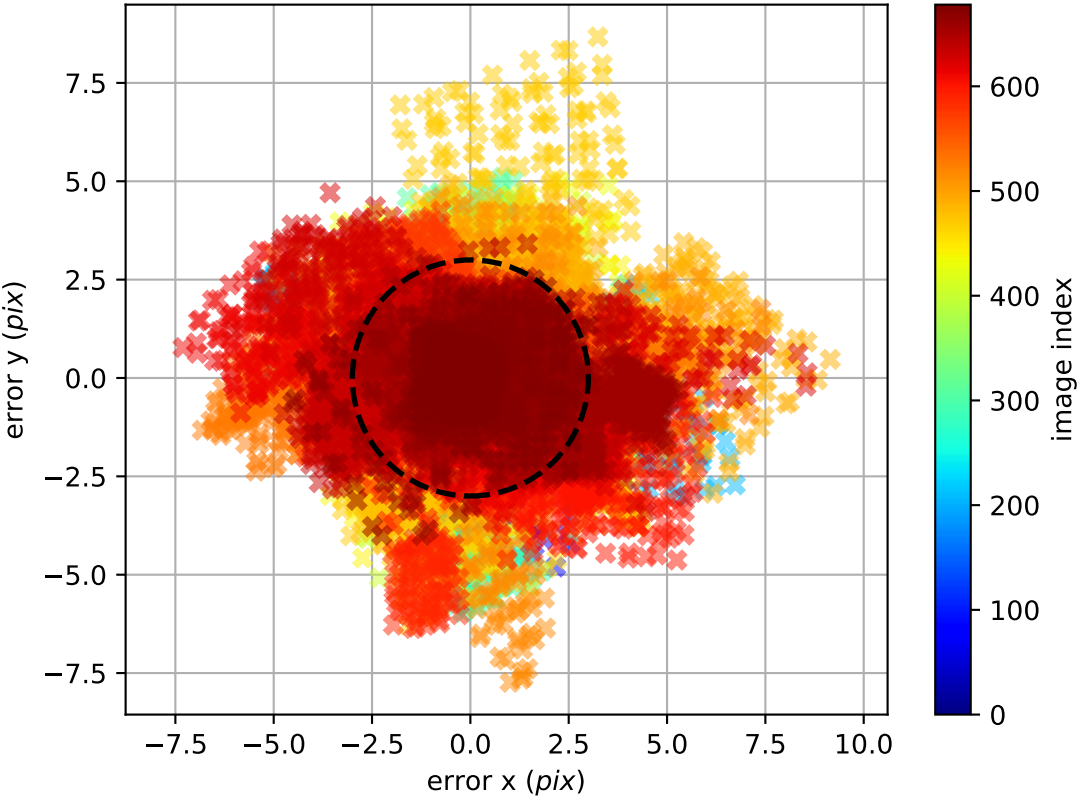

imu0: acceleration error
error (m/s^2)
2
0
−2
0
500
1000
1500
2000
2500
3000
error (m/s^2)
5
0
−5
0
500
1000
1500
2000
2500
3000
error (m/s^2)
0
−5
0
500
1000
1500
2000
2500
3000
error index

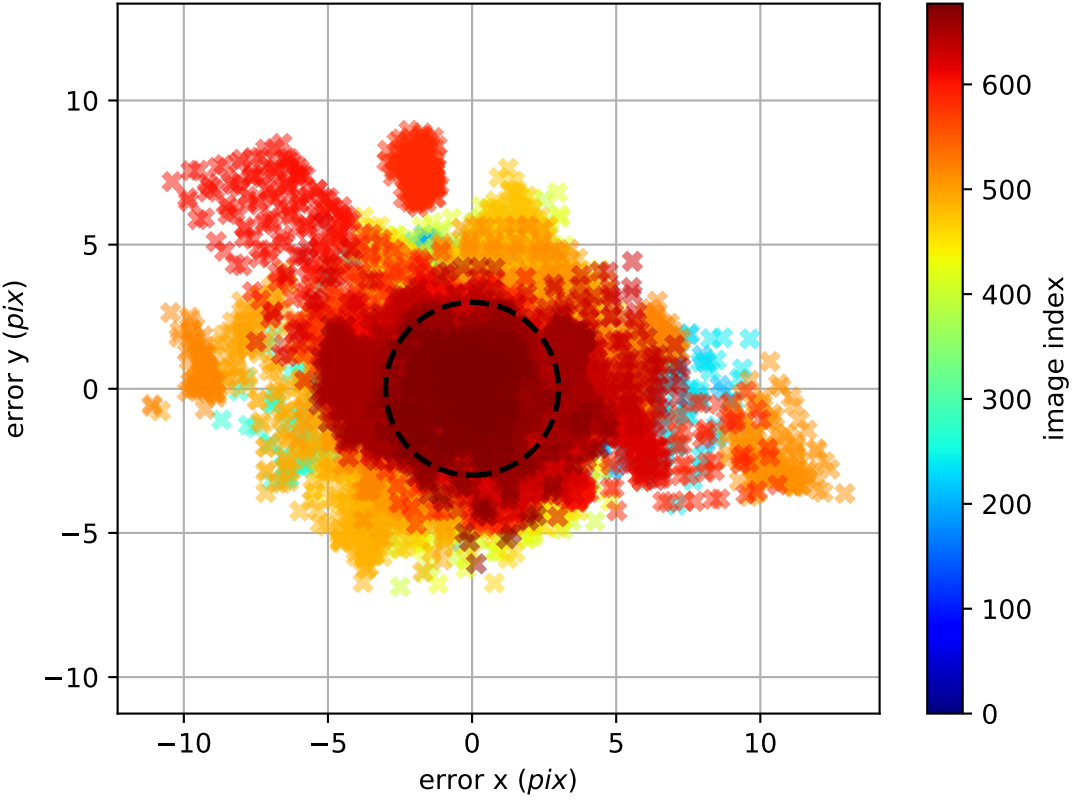

imu0: estimated accelerometer bias (imu frame)
bias (m/s^2)
0.05
0.00
−0.05
0
5
10
15
20
25
30
35
time (s)


Comparison of predicted and measured angular velocities (body frame)
ang. velocity (rad/s)
est. bodyspline
imu0
time (s)


imu0: angular velocities error
error (rad/s)
0.0
−0.5
0
500
1000
1500
2000
2500
3000
error (rad/s)
1
0
−1
0
500
1000
1500
2000
2500
3000
error (rad/s)
1
0
−1
0
500
1000
1500
2000
2500
3000
error index


imu0: estimated gyro bias (imu frame)
bias (rad/s)
0.010
0.005
0
5
10
15
20
25
30
35
bias (rad/s)
0.005
0.000
bias (rad/s)
0.000
−0.005
time (s)


cam0: reprojection errors
error x (pix)
error y (pix)
image index
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
10.0
600
500
400
300
200
100
0


cam1: reprojection errors
error x (pix)
error y (pix)
image index
−10
−5
0
5
10
0
100
200
300
400
500
600