

asp_camgen_video_bugfix

November 20, 2020

```
[69]: import pandas as pd
import matplotlib.pyplot
from shapely import wkt
from shapely.geometry.polygon import orient
import os
```

0.1 Examine Polygon Ordering in Planet Frame index

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```
[62]: fn = '../asp_skysat_camgen_bug/frame_index.csv'
df = pd.read_csv(fn)
```

```
[4]: df.head(5)
```

```
[4]:
```

		name	datetime	\
0	1284632131.97694254_sc00003_c3_PAN	2020-09-20T10:15:13.976943+00:00		
1	1284632131.97704649_sc00003_c1_PAN	2020-09-20T10:15:13.977046+00:00		
2	1284632131.97704840_sc00003_c2_PAN	2020-09-20T10:15:13.977048+00:00		
3	1284632131.99826574_sc00003_c3_PAN	2020-09-20T10:15:13.998266+00:00		
4	1284632131.99834394_sc00003_c1_PAN	2020-09-20T10:15:13.998344+00:00		

	gsd	sat_az	sat_elev	x_sat_eci_km	y_sat_eci_km	z_sat_eci_km	\
0	1.051616	64.642777	58.897812	-3997.77716	691.22320	5485.65794	
1	1.051614	64.642854	58.897845	-3997.77774	691.22347	5485.65748	
2	1.051614	64.642855	58.897845	-3997.77776	691.22347	5485.65747	
3	1.051411	64.658487	58.904490	-3997.89765	691.27882	5485.56330	
4	1.051411	64.658544	58.904515	-3997.89809	691.27902	5485.56295	

	qw_eci	qx_eci	...	x_sat_ecef_km	y_sat_ecef_km	z_sat_ecef_km	\
0	0.229826	0.004923	...	3891.98217	1182.94804	5477.73343	
1	0.229827	0.004923	...	3891.98282	1182.94803	5477.73297	
2	0.229827	0.004923	...	3891.98284	1182.94803	5477.73295	
3	0.229912	0.004951	...	3892.11648	1182.94633	5477.63855	
4	0.229913	0.004951	...	3892.11697	1182.94632	5477.63820	

	qw_ecef	qx_ecef	qy_ecef	qz_ecef	bit_dpth	\
0	0.248103	-0.927549	-0.215175	0.178319	16	
1	0.248103	-0.927549	-0.215174	0.178319	16	
2	0.248103	-0.927549	-0.215174	0.178319	16	
3	0.248097	-0.927541	-0.215143	0.178409	16	
4	0.248097	-0.927541	-0.215143	0.178409	16	

	geom	integration_time_ms
0	POLYGON ((13.4049961811328 52.6462725511156,13...	0.93808
1	POLYGON ((13.4049961286314 52.6462700417204,13...	1.20868
2	POLYGON ((13.4049961126609 52.6462699274226,13...	1.20868
3	POLYGON ((13.404983396467 52.645744323372,13.4...	0.73062
4	POLYGON ((13.4049834080681 52.6457424140774,13...	0.93808

[5 rows x 22 columns]

```
[13]: def correct_geom(row):
      return wkt.loads(row['geom'])
```

```
[15]: ### step 1 fix geometry
```

```
[63]: df['geom'] = df.apply(correct_geom,axis=1)
```

```
[50]: test_geom = df.geom.values[0]
```

```
[51]: print(orient(test_geom,1))
```

```
POLYGON ((13.4049961811328 52.6462725511156, 13.4049862600012 52.6368524715991,
13.4457056205799 52.6391812850262, 13.445912868603 52.6486402758456,
13.4049961811328 52.6462725511156))
```

```
[52]: print(orient(test_geom,-1))
```

```
POLYGON ((13.4049961811328 52.6462725511156, 13.445912868603 52.6486402758456,
13.4457056205799 52.6391812850262, 13.4049862600012 52.6368524715991,
13.4049961811328 52.6462725511156))
```

```
[64]: # orient in clockwise, starting from upper-left
      updated_geomlist_asp_convention = [orient(test_geom,-1) for test_geom in
      ↪df['geom'].values]
```

```
[65]: # remove space
      str(updated_geomlist_asp_convention[0]).split(' (')[0]
      updated_geomlist_asp_convention = [f"POLYGON(({str(test_geom).split(' (')[1]}")
      ↪for test_geom in updated_geomlist_asp_convention]
```

```
[58]: test_geom = updated_geomlist_asp_convention[0]
      ', '.join(test_geom.split(',')[:-1]+''))'
```

```
[58]: 'POLYGON((13.4049961811328 52.6462725511156, 13.445912868603 52.6486402758456,
      13.4457056205799 52.6391812850262, 13.4049862600012 52.6368524715991))'
```

```
[66]: ## Remove last polygon, since I do not want to download the updated ASP in the
      ↳night :
      updated_geomlist_asp_convention = [', '.join(test_geom.split(',')[:-1]+''))' for
      ↳test_geom in updated_geomlist_asp_convention]
```

```
[67]: ## Update the dataframe with the ASP expected polygon
      df['geom'] = updated_geomlist_asp_convention
```

```
[70]: ## write out
      out_fn = os.path.splitext(fn)[0]+'_asp_format.csv'
      df.to_csv(out_fn, index=False)
```

```
[ ]:
```