Lab 3: Essential Matrix and Epipolar Lines
Due date: March 17, 2021

Prelab work:

- Read Lecture 10.
- Get the camera parameters from Lab 2 (focal length, C_x, C_y, ...).
- Familiarize yourself with SVD function in MATLAB

A. Calculate the essential matrix:

1. Calculate H_c2_c1 from the known H_m_c1 and H_m_c2.
2. From that extract R_c2_c1 and Pc2org_c1.
3. Calculate E from Pc2org_c1 and R_c2_c1 using the skew symmetric matrix technique. It should be something like this:

```
true E =  0.5125     -8.0263     0.1489
          0.7072      0.1954    12.7048
          0.6222     -9.8417     0.0727
```

B. Draw epipolar lines:

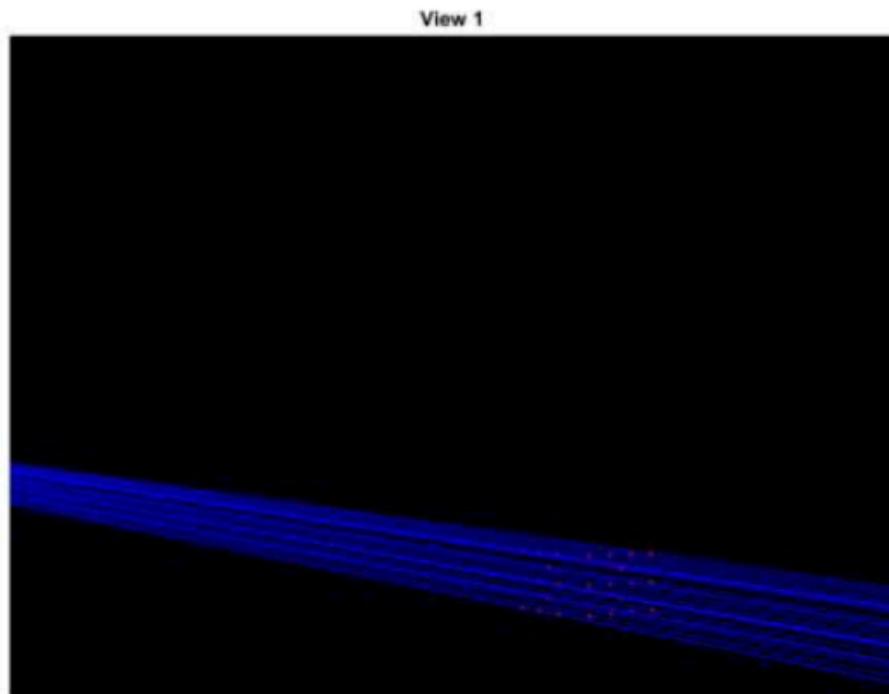Compute el=E*p2 where el=[a,b,c] and the equation of the line is ax+by+c=0

Figure 1. Epipilar lines

C. Use 8-point algorithm to compute E

Note that the calculated E is correct up to a scale. It should be something like this:

```
calculated E after scaling =

0.5109      -8.0393      0.1060
0.8696      -1.6487      13.5279
0.6188      -9.8417      0.0130
```

Submission: You need to submit:

1. A report including results (pdf or word),
2. The MATLAB code,

to the D2L DropBox folder by the deadline of this assignment.