**Planar Homography**

**Part (a)**

For a point on the common plane, and are the 2D projected point on the first and second camera respectively. The two are related by a relationship

For pairs of such points, we have

We let . Then for one set of points,

which can be reduced to

In matrix form,

Repeat this times to get

Part (b)

There are 9 elements

**Part (c) NOT YET DONE**

is a matrix that encodes a projective transformation. Hence, it has 7 degrees of freedom.

Each point correspondence gives two linear equations (derived above).

Part (d)

1. Compute the SVD of to get .

2. The solutions for is given by the rightmost column of the matrix .