

# Removing Projective Distortion from Images

Mickey Smith

August 2019

## 1 Homogenous Coordinates

Similar to cartesian coordinates, homogenous coordinates are a way to represent points in a given dimension.

(a) Cartesian  $\mathbb{R}^2$

(b) Homogenous  $\mathbb{R}^2$

Figure 1: Representing coordinates as homogenous and cartesian

The only practical difference between cartesian and homogenous for the purposes of this assignment is that homogenous coordinates containing a higher dimension value that represents scaling. This allows a point to be further from the origin on its component vector without altering the other coordinates.

## 2 Projective Transformations

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$$