Homework 2

Computer Vision 3D – 67542

Due Date: 23rd of April 2023

Instructions

Please read the following questions and answer them in detail.

Questions

1)
   a) Prove that the cross-ratio is invariant under the projective transformation (use homogeneous coordinates).
   b) Use the cross-ratio to measure something in an image, based on 0, ∞ and a known length.

2) Take a picture of a circle that becomes a parabola.
   steps:
   - Figure out where to place the camera relative to a circle.
   - Fit a conic to points on the imaged circle.
   - Compute the discriminant of the conic equation to prove that it is a parabola.

3) Use your camera to capture an image. Based on 6 known (world coordinates) points, find the camera's location.