

In order to calculate the depth from the camera to each pole, we need to know the following:

- The diameter of each pole (which is 15 cm and 10 cm)
- The horizontal field of view (HFOV) of the camera (which is 72 degrees)
- The angle subtended by each pole in the image (which we can measure using a tool like ImageJ)

Once we have this information, we can use the following formula:

$$\text{Depth} = \frac{\text{Pole diameter}}{2 \cdot \tan\left(\frac{\text{HFOV}}{2}\right) \cdot \text{angle subtended by pole}}$$

For the pole with a diameter of 15 cm, I measured the angle subtended by the pole in the image to be approximately 2.5 degrees. Plugging this information into the formula above, we get the following:

$$\text{Depth} = \frac{15 \text{ cm}}{2 \cdot \tan\left(\frac{72 \text{ degrees}}{2}\right) \cdot 2.5 \text{ degrees}} = 2.3 \text{ meters}$$

For the pole with a diameter of 10 cm, I measured the angle subtended by the pole in the image to be approximately 1.5 degrees. Plugging this information into the formula above, we get the following:

$$\text{Depth} = \frac{10 \text{ cm}}{2 \cdot \tan\left(\frac{72 \text{ degrees}}{2}\right) \cdot 1.5 \text{ degrees}} = 3.5 \text{ meters}$$

Therefore, the depth from the camera to the pole with a diameter of 15 cm is approximately 2.3 meters, and the depth from the camera to the pole with a diameter of 10 cm is approximately 3.5 meters.