To calculate the depth from the camera to each pole, we can use the concept of triangulation. Triangulation involves using the known dimensions and angles to determine the distances.
Assuming we have the following information:

- Diameter of the first pole (Pole A): 15cm
- Diameter of the second pole (Pole B): 10cm
- Horizontal field of view (HFOV) of the camera: 72 degrees

We can proceed with the following steps:

1. Measure the apparent width of each pole in the photo. Let's denote them as ApparentWidthA and ApparentWidthB.
2. Calculate the actual width of each pole using the known diameters and the apparent widths. We can use the formula:
   ActualWidth = (ApparentWidth * ActualDiameter) / ApparentDiameter

   For Pole A:
   ActualWidthA = (ApparentWidthA * 15) / ApparentDiameterA

   For Pole B:
   ActualWidthB = (ApparentWidthB * 10) / ApparentDiameterB
3. Calculate the distance from the camera to each pole using triangulation. We can use the formula:
   Distance = (ActualWidth / 2) / tan(HFOV / 2)

   For Pole A:
   DistanceA = (ActualWidthA / 2) / tan(72 / 2)

   For Pole B:
   DistanceB = (ActualWidthB / 2) / tan(72 / 2)

But how we can find the apparent widths and the apparent diameter ??

To find the apparent width and apparent diameter in the context of an image, you can use image processing techniques and measurements. Here's a general approach:

1. Obtain the image that contains the poles.
2. Use image processing techniques to detect and locate the poles in the image. This can involve methods like edge detection, contour detection, or object recognition algorithms.
3. Once you have identified the poles in the image, measure the pixel width of each pole. This can be done by measuring the number of pixels between two points on the pole's edge or by fitting a bounding box around the pole and measuring its width in pixels.

4. Convert the pixel width to the apparent width using a calibration process. In this step, you need to establish a relationship between pixel measurements and actual physical measurements. This can be done by capturing an image of a known object with known dimensions placed in the same scene as the poles. By comparing the pixel measurements of the known object with its actual dimensions, you can establish a conversion factor.
5. Calculate the apparent diameter of each pole by dividing the measured apparent width by the number of pixels across the diameter.

The dimensions of the image is 4000*3000 px so with applying the ratio rule we will find that the 15cm pole has 160 px

And the 10 cm pole has 69px

Let’s take the 15 cm pole:

the apparent diameter =0.7 cm (measured)

the apparent width is 160 px

the actual width = 160*15/0.7=3428.571429 then , the distance is 1.6 meters

for pole b :

the apparent diameter =0.3 cm (measured)

the apparent width is 69 px

the actual width = 69*10/0.3=2300 then , the distance is 1.6+1=2.6 meters