> This assignment is to be carried out individually in Matlab and you have to deliver the code, with results and calculations in a single PDF file. You have to show the results in class.

Nombre y apellidos: _____

## Exercises

1. The images "robot1.jpg", "robot2.jpg", and "robot3.jpg" are on the course website. Using the same program, find the concentric circle targets in all three images and draw crosshairs on top of the targets, on the original images. Your program should find all five valid fiducial targets, and reject false targets (you may have to use additional tests to reject false targets). Next, automatically identify the targets and label them with "UL", "UM", "UR", "LL", or "LR" for upper left, upper right, lower left, etc. This is called the "correspondence" problem – trying to find the correspondence between image features and model features – and is a key part of object recognition.



One approach is to look for features that are invariant with respect to pose. A simple invariant feature for this target is the co-linearity of the three top target circles. Regardless of pose, a set of three points that are collinear in 3D space will also be collinear in the image. So you could try all combinations of three detected features to find a set that is collinear. Identifying the order of the three features, and the two remaining features, is then pretty straightforward.