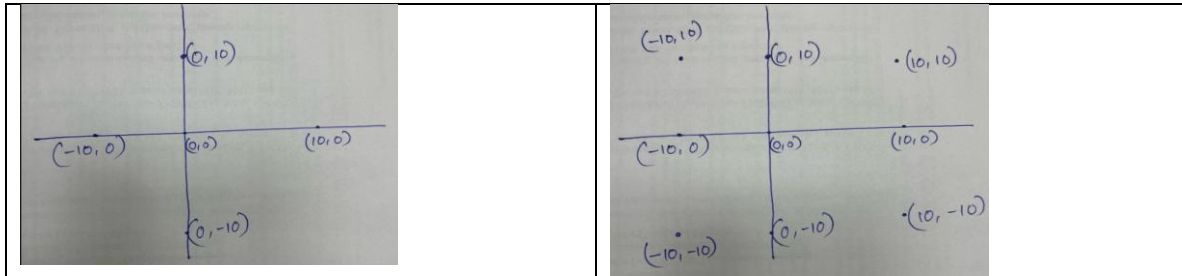


Assignment: Distance-Based Object Detection using Ego-Centric Coordinates



An ego (reference) vehicle is placed at the origin (0,0) of a 2-D Cartesian coordinate system. Several neighboring vehicles are positioned around the ego vehicle at known (x, y) coordinates.

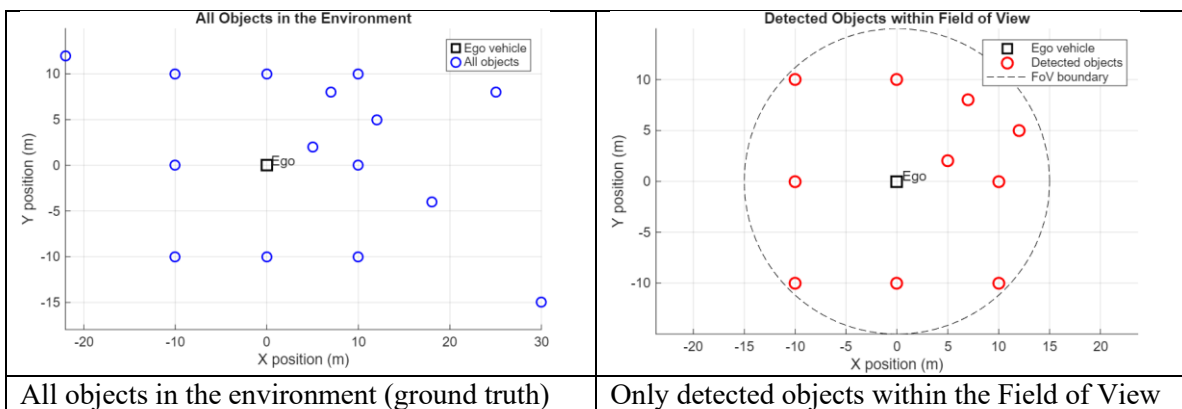
The goal is to compute the distance between the ego vehicle and each surrounding object and determine which objects fall within a specified sensing range.

Mathematical Model: Distance Computation

The Euclidean distance between two points (x1, y1) and (x2, y2) is given by:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

MATLAB Visualization



All objects in the environment (ground truth)

Only detected objects within the Field of View