

IRO Homework 4: 2D beacon SLAM.

Karel Zimmermann

Robot on unknown position x measured three distances d_1, d_2, d_3 towards three beacons a_1, a_2, a_3 . Given the set of three measured distances and positions of three beacons estimate the robot position x .

$$d_1 = 3.6056, d_2 = 2.0000, d_3 = 4.1231,$$

$$a_1 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}, a_2 = \begin{pmatrix} 3 \\ 2 \end{pmatrix}, a_3 = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$

1. Formulate the problem as a overdetermined set of non-linear equations.
2. Linearize and iteratively solve the problem.