

Name of the game: On Boarding

The Selected Programing Language: Python

Introduction:

In this problem, if we simplify the main problem, it is comparing Euclidean distances between points. In the simplest form, the search space is 1D space, because in this example we are not given the coordinates of the places of the enemies. Instead, here the input is the distance itself. The inputs are integers in the example. To distinguish the immediate danger, the closest enemy, we just need to compare their distances from us to see which one is smaller. The smaller one is the immediate threat.

To implement the code, we need to do a condition statement. In the condition statement the distances will be compared. According to the result of the condition statement we print which one of them is closest enemy. For each set of inputs, the condition will be checked. In the following Figure, imagine we are in the reference point and the enemies are those two points. The one which has smaller distance will be the immediate threat. In this case, it seems that A is that one.

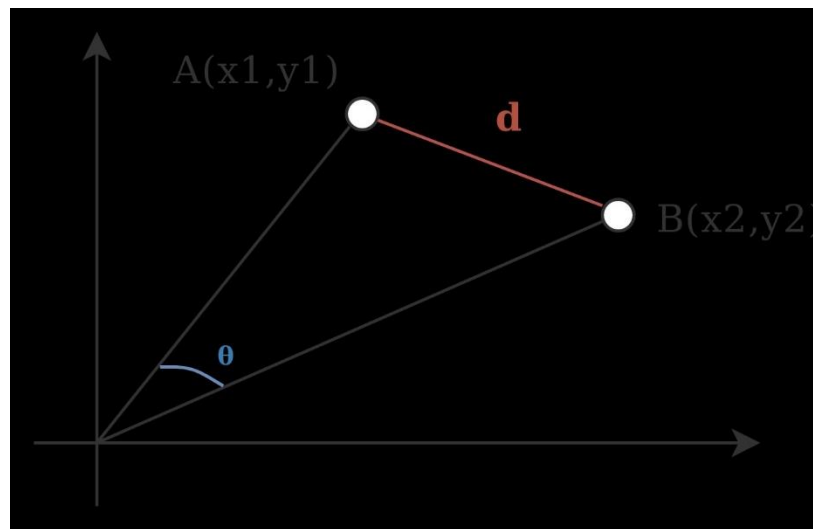


Fig 1. A Diagram of Euclidean Distance [1]

Problem-Solving Methodology

1. Comprehension of the Problem:

- The task involves comparing the Euclidean distances between a reference point (representing our position) and two enemies, situated in a one-dimensional space. The objective is to determine which enemy is closest, as this represents the most immediate threat.

2. Initial Thoughts:

- To clarify the problem, the scenario was conceptualized as occurring within a Euclidean space, where two enemies are positioned at distinct points. The task is to ascertain which enemy is nearer by evaluating their respective distances from the reference point.
- A straightforward condition check was then considered, wherein the distances of the two enemies are compared, with the enemy having the shorter distance being identified as the immediate threat.

3. Visualization and Planning:

- Prior to coding, a graphical representation of the problem, as depicted in Figure 1, was contemplated. The problem can also be illustrated on a line, where different points denote varying distances from the reference.

References:

1. <s://cmry.github.io/notes/euclidean-v-cosine>