

Assignment -1

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The python code and Latex file can be found here:

https://github.com/Sairam13001/AI5006/tree/master/Assignment_1

Problem 1:

Find the distance between the two planes

$$(2 \ 3 \ 4)x = 4 \text{ -----(i) \& } (4 \ 6 \ 8)x = 12 \text{ -----(ii).}$$

Solution:

- If the two planes are of the form $n^T x = c_1$ & $n^T x = c_2$, then the distance between them is given by :

$$\text{abs}\{c_1 - c_2\} / \text{norm}\{\text{vec}\{n\}$$

Which can be written in python as

$$\text{distance} = \text{abs}(c1 - c2) / \text{numpy.linalg.norm}(n)$$

- The given two planes are $(2 \ 3 \ 4)x = 4$ & $(2 \ 3 \ 4)x = 6$
- So, the distance between the planes is

$$\begin{aligned} & |4 - 6| / \sqrt{4+9+16} \\ &= 2/\sqrt{29} \\ &= 0.371 \text{ units.} \end{aligned}$$