1.10.8

EE25BTECH11049 - Sai Krishna Bakki

Question:
Find the unit vector in the direction of the vector $a = \hat{i} + \hat{j} + 2\hat{k}$
Solution:
Given:

$$\mathbf{a} = \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix} \tag{0.1}$$

$$\|\mathbf{a}\| = \sqrt{\mathbf{a}^\top \mathbf{a}} = \sqrt{(1)^2 + (1)^2 + (2)^2} = \sqrt{6} \tag{0.2}$$

The unit vector in the direction of $\mathbf{a}$ is

$$\frac{\mathbf{a}}{\|\mathbf{a}\|} = \frac{1}{\sqrt{6}} \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix} \tag{0.3}$$

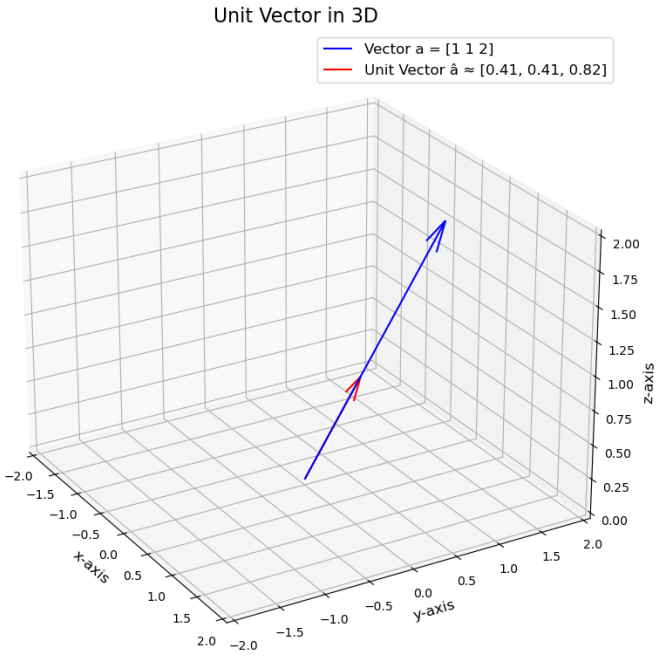

Fig. 0.1: plot using only python