Proportion of Variance Equation

up to K $\left[\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4\right]$ — absolute values only

all $\left[\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4\right]$ — sorted in descending order

Eigenvalues: $[4.22484077, 0.24224357, 0.07852391, 0.02368303]$

$$\rightarrow \begin{cases} \lambda_1 = 4.22484077 \\ \lambda_2 = 0.24224357 \\ \lambda_3 = 0.07852391 \\ \lambda_4 = 0.02368303 \end{cases}$$

(1) $PoV = \dfrac{\lambda_1}{\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4} = \dfrac{4.22484077}{np.sum(eigenvals)}$

$= 0.9246162075419152$

(2) $PoV = \dfrac{\lambda_1 + \lambda_2}{\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4} = \dfrac{np.sum(eigenvals[0:2])}{np.sum(eigenvals)}$

$= 0.9776317750248034$

(3) $PoV = \dfrac{\lambda_1 + \lambda_2 + \lambda_3}{\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4} = \dfrac{np.sum(eigenvals[0:3])}{np.sum(eigenvals)}$

$= 0.9948169145498$

(4) $PoV = \dfrac{\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4}{\lambda_1 + \lambda_2 + \lambda_3 + \lambda_4} = \dfrac{np.sum(eigenvals)}{np.sum(eigenvals)}$

$= 1.00$

$PoV = [0.925, 0.978, 0.995, 1.00]$ ✓