Project 3(a)

Object recognition using DD measures and Correlation

Classify **a given object** for **ETH-80** dataset using *Pearson's Correlation Coefficint* with following Data dispersion (Variance analysis/variability/ Scatter/Spread) measures: *Five-Number Summary*, *Variance*, *Mean deviation*, *Skewness*, and *coefficient of variation*.

The **mean deviation** is defined as the arithmetic mean of the absolute deviations from the means and is calculated as:

$$mean\ deviation = \frac{\sum_{i=1}^{n} |x - \bar{x}|}{n} \tag{2.1}$$

where, $\bar{x}$ is the arithmetic mean of the values and n is the total number of values. This value will be greater for distributions with a larger spread.

A common **measure of skewness** is:

$$\frac{\bar{x} - mode}{s} \tag{2.2}$$

which indicates how far (in standard deviations, s) the mean ($\bar{x}$) is from the mode and whether it is greater or less than the mode.

The **coefficient of variation** is the standard deviation expressed as a percentage of the arithmetic mean and is calculated as:

$$coefficient\ of\ variation = \frac{s}{\bar{x}} \times 100 \tag{2.3}$$

The variability in groups of observations with widely differing means can be compared using this measure.

Use **GUI.** A sample GUI is shown below: