

Row-vector & column-vector

flower: $[SL, PL, SW, PW]$
real-values

\mathbb{R} : real space

11k point: $x_i \in \mathbb{R}^d \rightarrow d\text{-dim. column vector}$

$$x_i = \begin{bmatrix} x_{i1} \\ x_{i2} \\ x_{i3} \\ x_{id} \end{bmatrix}_{d \times 1} \quad \text{: column-vector}$$

$$f1 = \begin{bmatrix} 2.1 \\ 3.2 \\ 1.6 \\ 4.2 \end{bmatrix}$$

column-vector

By default Any vector is considered as column vector until it's explicitly specified as row vector.

Let's take example of iris dataset, here we have 4 features(columns) and 150 rows,

Each row in that 150th row contains 4 feature's value, but by default it's known as column vector in machine, that means for iris we have 150 column vector each with dimension 1×4 .

or, Column-vector, Dimensionality reduction and Visualization

$$x_i = [2.1, 3.2, 4.6, 1.2]_{1 \times 4} \quad \text{: row-vector}$$

$$x_i \in \mathbb{R}^d$$

\uparrow
column-vector

Comments :

if you have seen iris dataset, it contains 150 rows and 4 columns.in matrix notation represented as (150×4) . each row in this dataset can be represented as a row vector(i.e lets take example row=5,it has $[5.0, 3.6, 1.4, 0.2]$ means row 5 is of dimension (1×4) and has values for sepal length=5.0, sepal width=3.6, petal length = 1.4, petal width=0.2).Vector in machine learning generally means column vector