SCALARS AND VECTORS

The definition of vectos is different on:

1) Physics 2) Maths 3) Computer Sciences-> Data Science

Scalar definition:

A scalar is a single numerical value, And represent a magnitud or quatity and has not direction.

Example:
Car speed is 45 km/hr -> magnitude , no has direction

Temperature in celsius T = 25°C -> magnitude , no has direction

Application in Data Science

Dataset: Count of the total records = 5, Average of the feacture 1 f1= -----

| f1 | f2 | f3 |
|---|---|---|
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |

Simple Linear Regresion -> y = mx + c -> where m is slope and c is intercept is a scalar value

Definition Vectors:

Numerical value which has both magnitude and direction.

In Datascience: Is an ordered list of numbers. It can represent a point in space or quantity with both magnitude and direction.

Example Speed of the car is 45 km/hr and is moving toward est direction.

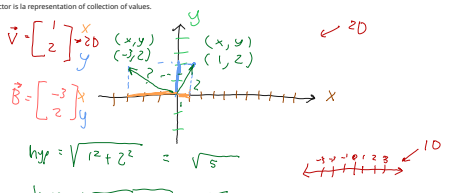

Example: Student marks

| IQ | N° of study hours | Pass/Fail |
|---|---|---|
| 90 | 3hrs | Fail |
| 100 | 3hrs | Pass |

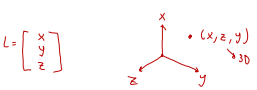
A vector representing person IQ and n° of study hours [90, 3 hrs] where 3 is magnitude and hrs the units

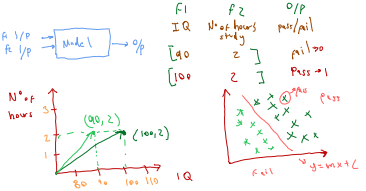
A vector representing person's weight over time [73, 75, 79, 74] <- vectors respect to time, this vector has 4 dimentions

The vector is la representation of collection of values.



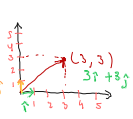

TO VECTOS IN 3 Dimentions

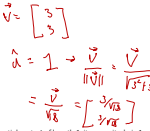



If you add more feactures f1, f2, f3 , ... , fn , the human only can imagene 3 dimensions, the algebra linear support operations an work with n quatity of dimensions.

UNIT VECTOR



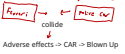




a unit vector in a normed vector space is a vector (often a spatial vector) of length 1, its magnitude is 1.

unit vector towards x and y axis , magnitud value is equal 1

Gaming Industry

GTA 6




Adverse effects -> CAR -> Blown Up