Vectors

Vectors are 1-dimentional **Arrays**

Vectors have a **Magnitude** and a **Direction**

Vector Notation

Vectors can be written in many ways. The most common are:

v =   1 2 3

or:

$$v = \begin{matrix} 1 \\ 2 \\ 3 \end{matrix}$$

Vectors in Geometry

The image to the left is a **Vector**.

The **Length** shows the **Magnitude**.

The **Arrow** shows the **Direction**.

Machine Learning experts cannot live without **Linear Algebra**:

- ML make heavy use of **Scalars**
- ML make heavy use of **Vectors**
- ML make heavy use of **Matrices**
- ML make heavy use of **Tensors**

Scalar

1

Vector(s)

1   1 2 3

2

3

Matrix

1 2 3

4 5 6

Tensor

1 2 3   4 5 6

4 5 6   1 2 3

Vectors and Matrices

Vectors and **Matrices** are the languages of data.

Scalars

In linear algebra, a scalar is a **single number**.

Tensors

A Tensor is an **N-dimensional Matrix**.