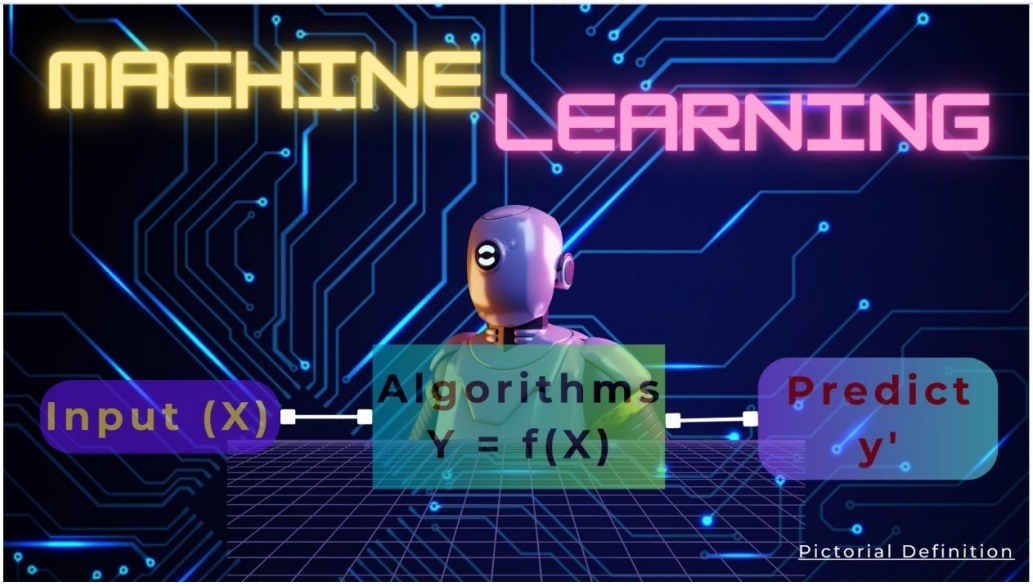
Machine Learning

The field of study that gives computers the ability to learn without being explicitly programmed.



$$f : \mathbb{X} \to \mathbb{Y}$$

$$y = f(x)$$

$$y = x^{\alpha}$$

$$y = x^{\alpha\beta}$$

$$y = x^{\alpha\beta\gamma}$$

$$y = x^{(1)\alpha_1\alpha_2\alpha_1\cdots\cdots\alpha_n}_{\beta_1\beta_2\beta_3\cdots\cdots\beta_m}$$

$$y = x^{(1)\alpha_1\beta_2\ldots\beta_m}_{\beta_1\beta_2\ldots\alpha_m} \cdot x^{(2)\alpha_1\beta_m\ldots\alpha_n}_{\beta_1\beta_2\ldots\beta_m} \ldots x^{(n)\alpha_1\alpha_2\ldots\alpha_n}_{\beta_1\beta_2\cdots\beta_m}$$

Examples of Machine Learning

- Facial recognition
- Product recommendations
- Email automation and spam filtering
- Financial accuracy
- Social media optimization
- Healthcare advancement
- Mobile voice to text and predictive text
- Predictive analytics

Types of Machine Learning

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning

* Supervised Learning

We feed data to algorithms, in which data is labeled and we know what our output should be look like, having the relationship between input (x) and output (y), called Supervised Machine Learning

$$y = x^{(1)\alpha_1\alpha_2\alpha_1\cdots\cdots\alpha_n}_{\beta_1\beta_2\beta_3\cdots\cdots\beta_m}$$

$$y = x^{(1)\alpha_1\beta_2\ldots\beta_m}_{\beta_1\beta_2\ldots\alpha_m} \cdot x^{(2)\alpha_1\beta_m\ldots\alpha_n}_{\beta_1\beta_2\ldots\beta_m} \ldots x^{(n)\alpha_1\alpha_2\ldots\alpha_n}_{\beta_1\beta_2\cdots\beta_m}$$

Unsupervised Learning

In this type we feed data to algorithms which is not labeled, or we can't say anything what our output should look like, and there is no relationship between input (x) and output (y), called Unsupervised Machine Learning

*Reinforcement Learning

An area of machine learning concerned with how intelligent agents ought to take actions in an environment in order to maximize the notion of cumulative reward. Reinforcement learning is one of three basic machine learning paradigms, alongside supervised learning and unsupervised learning, called Reinforcement Machine Learning.