

Machine Learning

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What's Machine Learning?

“Machine learning will automate jobs that most people thought could only be done by people.” - **Dave Waters**

Examples:

- Amazon recommendations based on their customer's browsing and purchasing behavior.
- Google's search engine, that ranks the websites by relevancy.
- Self-driving cars.
- Email spam filters.



Types of Machine Learning

Learning algorithms:

- Supervised learning
- Unsupervised learning
- Reinforcement learning

Desired output:

- Classification (spam, not spam)
- Regression (house prices, stock prices)
- Clustering (customer segmentation)
- Density estimation (test results of a specific number of people)
- Dimensionality reduction (mapping inputs into a lower-dimensional space)

Neural Networks

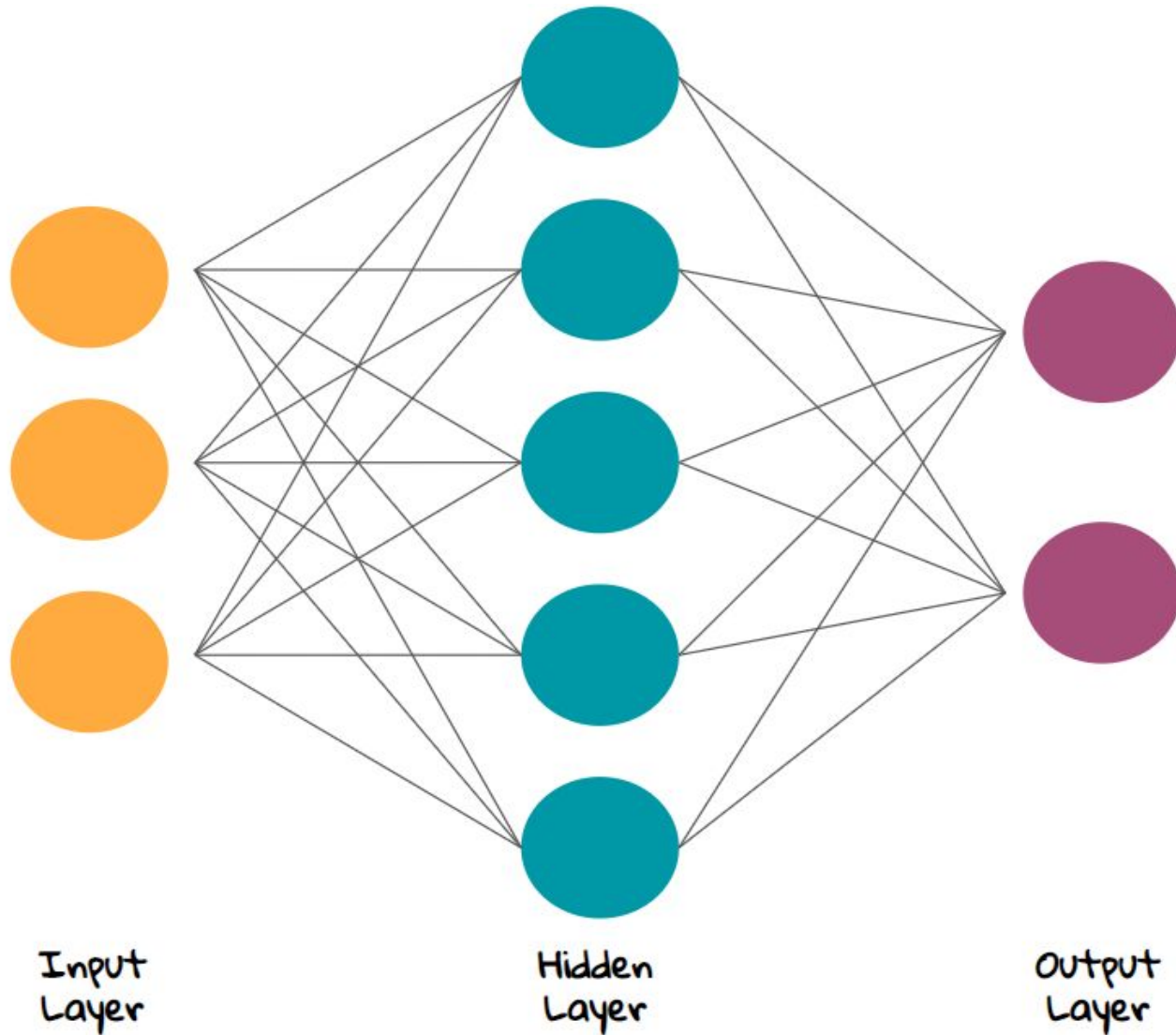
Main objects of ANN:

- Neurons (Nodes)
- Layers
- Learning
- Connections



*The goal is to mimic the way the human brain organizes
and make right predictions*

Neural Networks



Training

Back propagation:

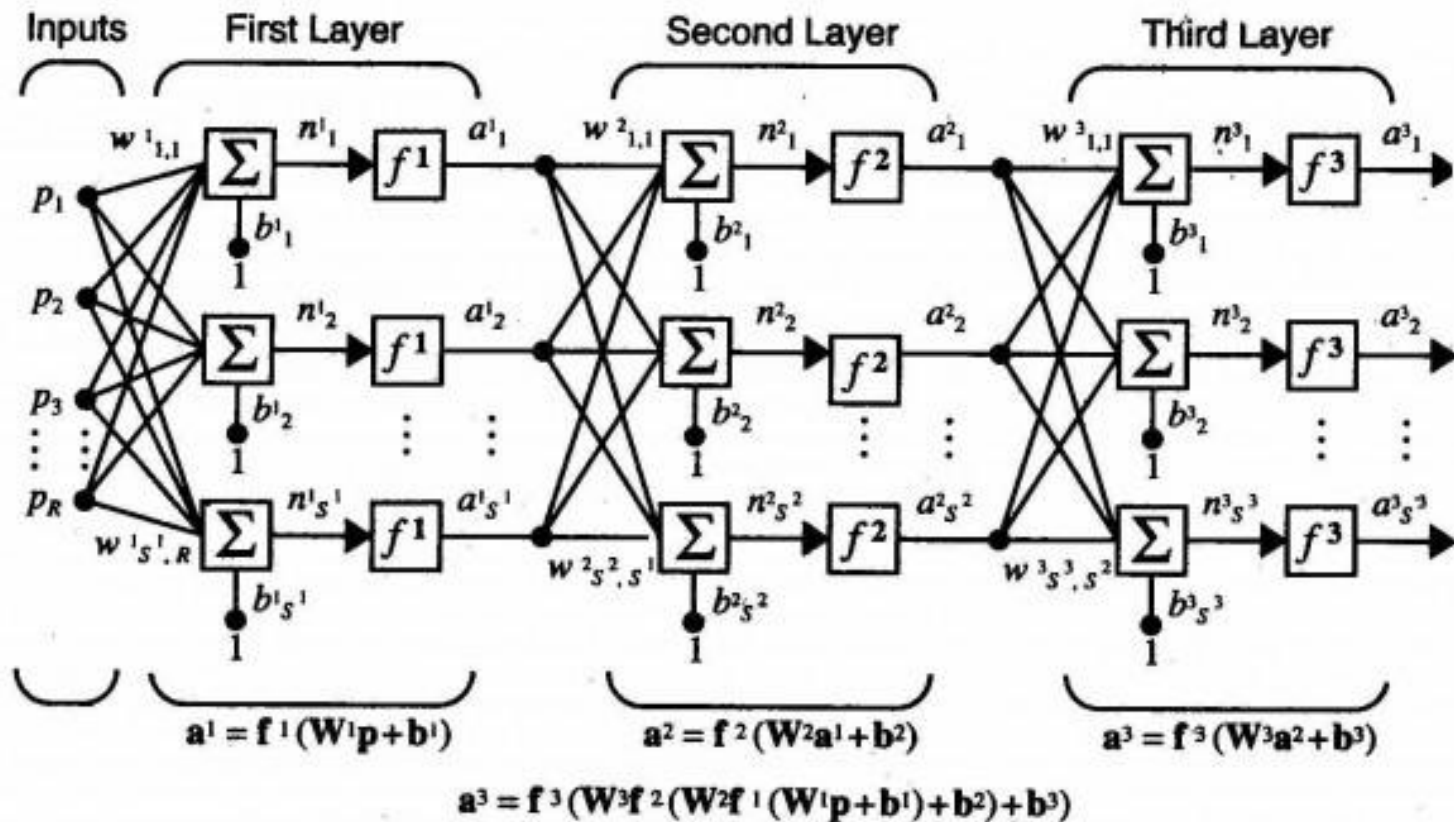
1. Random weight
2. Take the inputs from the training set and pass them
3. Calculate error
4. Adjust the weights
5. Repeat this 10K times.



Training

Output = $w_1 \cdot \text{in}_1 + w_2 \cdot \text{in}_2$

Adustment = $0.01 \cdot \text{err} \cdot \text{input}$



People who know about AI
nothing and says I'll destroy
humanity soon

My ANN

