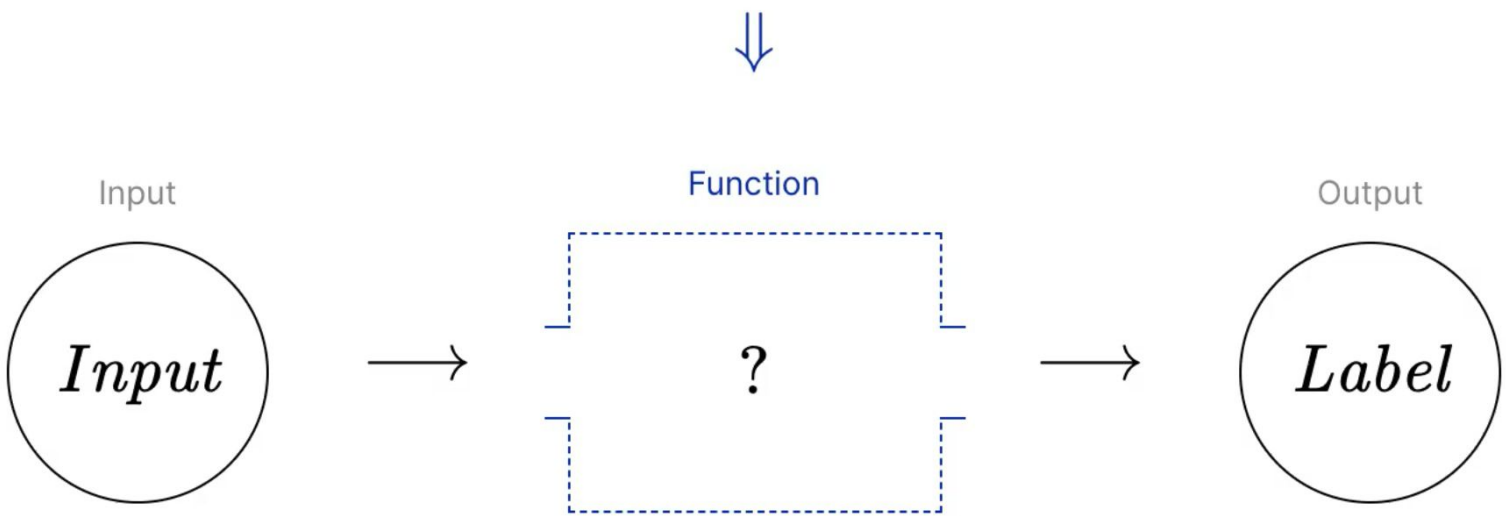
Variations of ML models

1) Supervised Learning

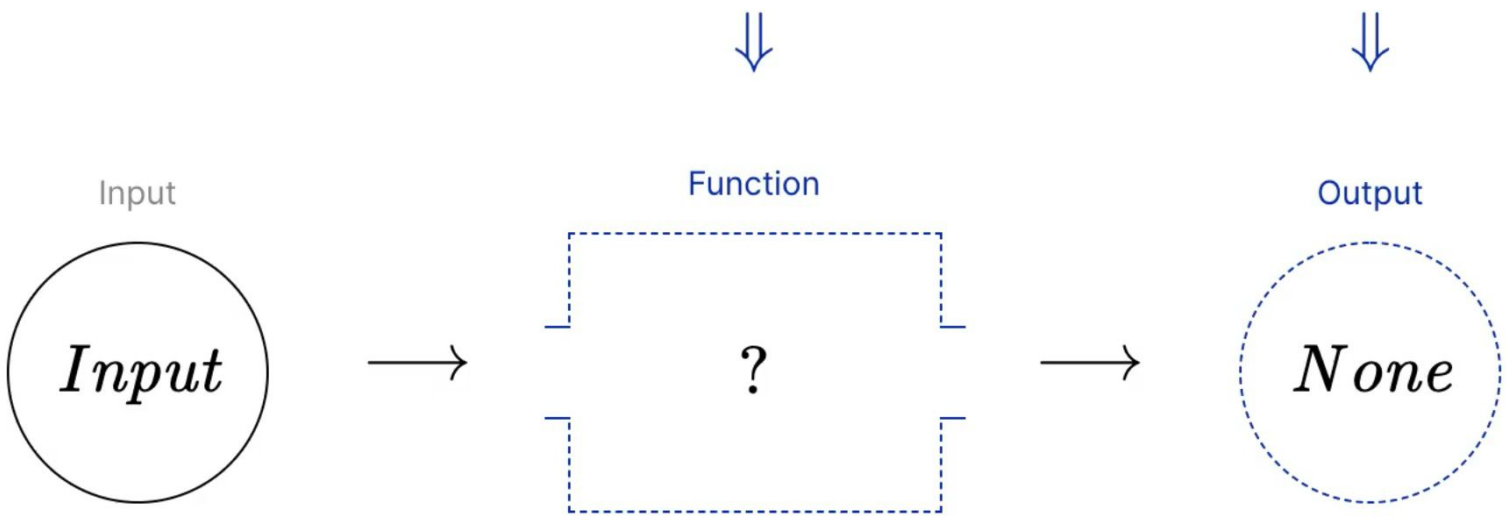
2) Unsupervised Learning

3) Reinforcement Learning

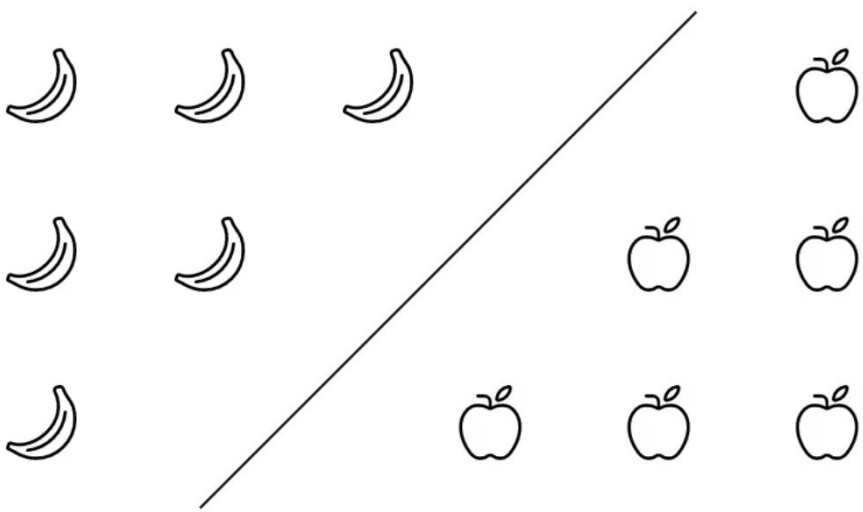
1) Supervised Learning



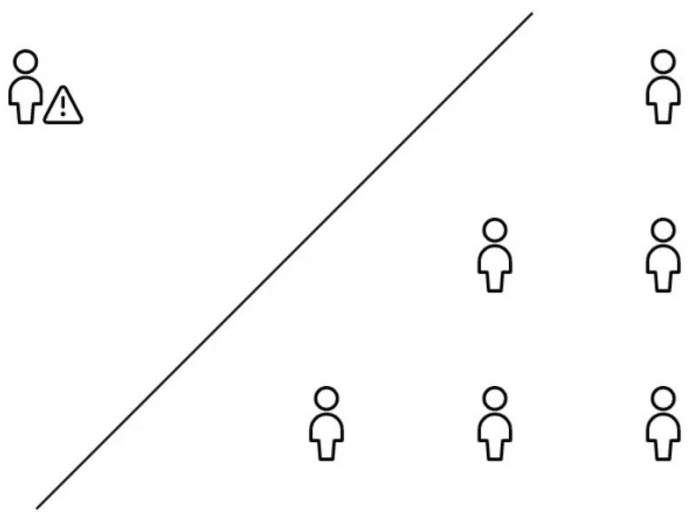
2) Unsupervised Learning



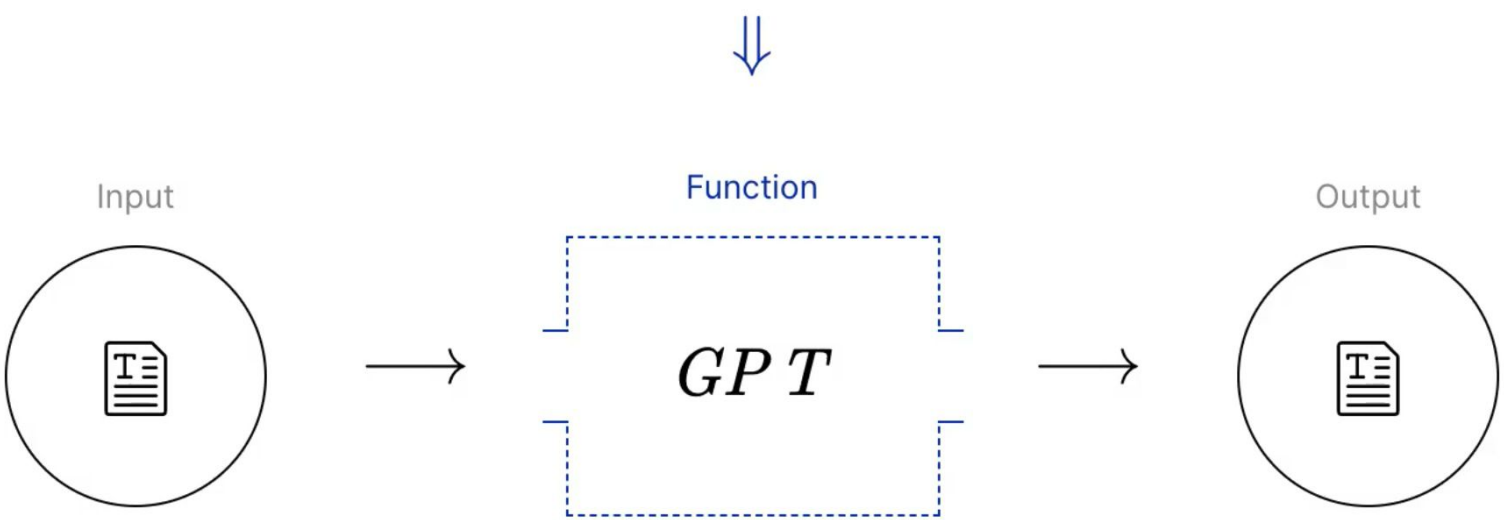
Unsupervised Ex 1) Apples and bananas



Unsupervised Ex 2) Fraud detection



Unsupervised Ex 3) Natural Language Processing (NLP)



Unsupervised Ex 3) Natural Language Processing (cont'd)

"We are going to die, and that makes us the lucky ones."

$$
\begin{aligned}
We &\longrightarrow are \\
We\ are &\longrightarrow going \\
We\ are\ going &\longrightarrow to \\
We\ are\ going\ to &\longrightarrow die
\end{aligned}
$$

Supervised vs Unsupervised Learning

Supervised learning is more costly

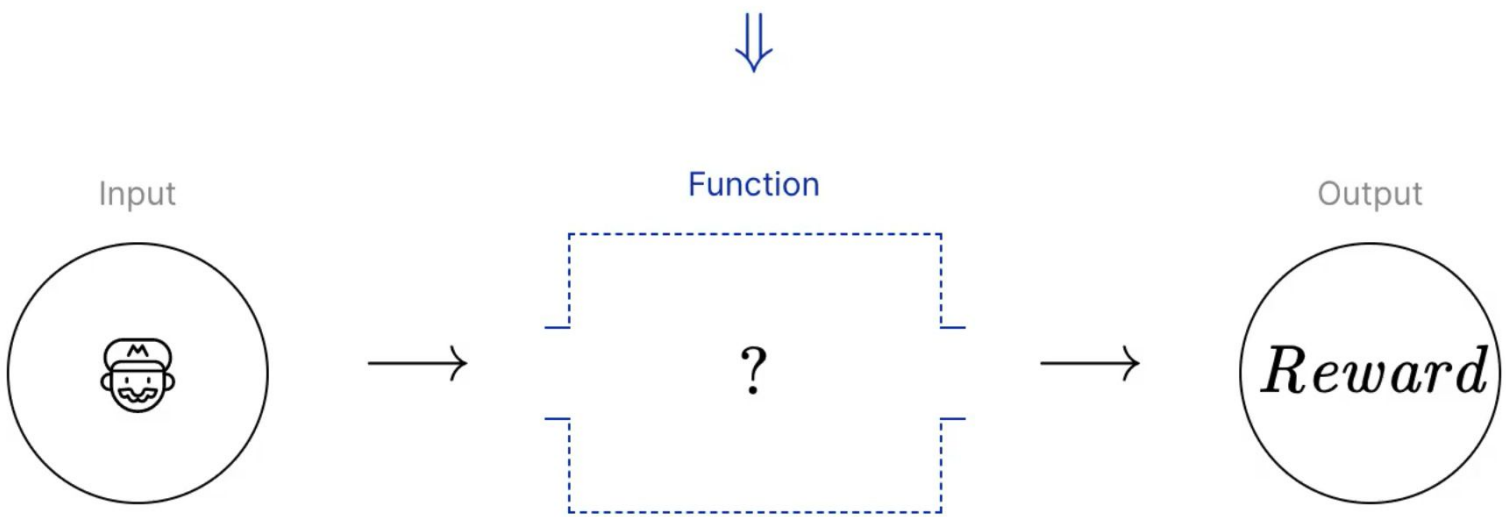
Unsupervised learning can't be used everywhere

Unsupervised models are becoming more important

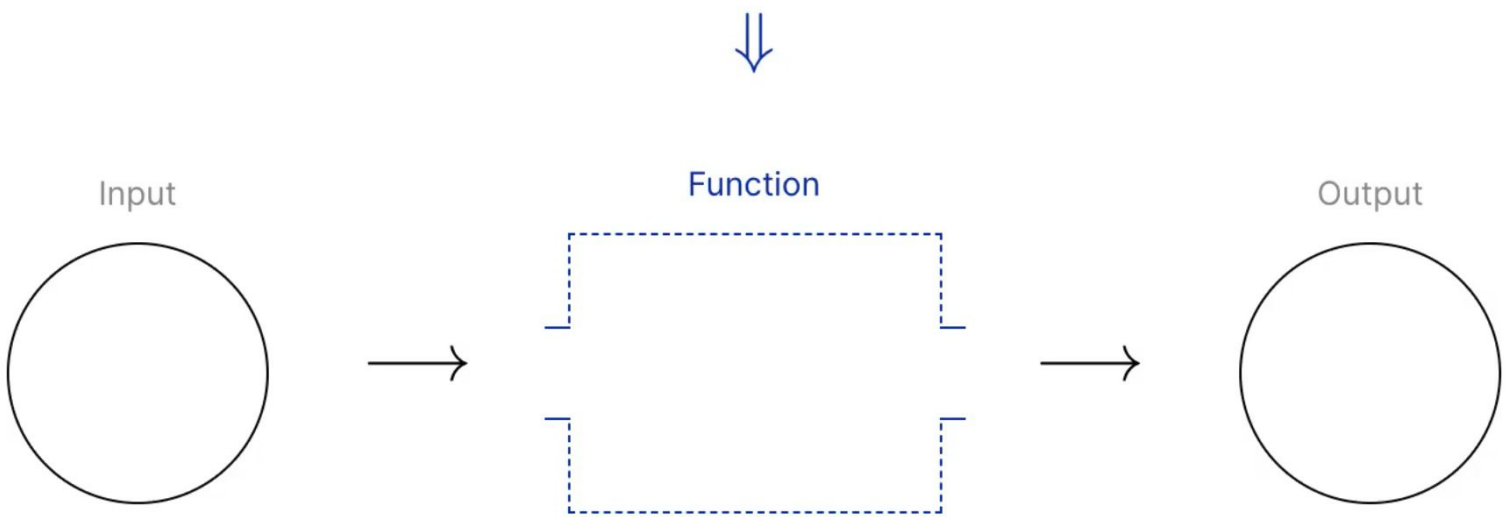
Powerful new architectures like VAE and Transformers

We just didn't have good enough architecture and computing power so far

3) Reinforcement Learning



Still all based on input > fn > output



Variations of ML models

$$Supervised\ Learning: \ Input + Output \longrightarrow Fn$$

$$Unsupervised\ Learning: \ Input \longrightarrow Fn$$

$$Reinforcement\ Learning: \ Input + Output\ (sometimes) \longrightarrow Fn$$