

Offline VS Online Learning:

Offline Learning vs Online Learning (Machine Learning Types)

Feature	Offline Learning (Batch Learning)	Online Learning
Definition	Model is trained on the <i>entire dataset at once</i>	Model learns <i>continuously</i> as new data arrives
Training Style	Batch-wise, one big training step	Incremental, small updates
Data Requirement	Requires full dataset before training	Does not require full dataset; learns piece by piece
Speed	Slower to train (big batches)	Fast updates (small chunks)
Memory Usage	High (stores whole dataset)	Low (only small data chunks needed)
Adaptability	Cannot easily adapt to new data; needs retraining	Easily adapts to new data in real-time

Use-Case	Stable data that doesn't change often	Streaming or rapidly changing data
Examples	House price prediction, medical diagnosis	Stock price prediction, fraud detection, online ads