**Long Short-Term Memory (LSTM) Networks**

**What is LSTM?**

**LSTM (Long Short-Term Memory)** is a type of **Recurrent Neural Network (RNN)** used for **sequential data** — like time series, text, or audio. Unlike basic RNNs, LSTMs are good at remembering information over long sequences.

**Why LSTM?**

Regular RNNs struggle with "long-term dependencies", they forget earlier data too quickly. LSTM solves this using a special structure called a **cell state** and **gates**.

**2. LSTM Cell Structure**

An LSTM cell has **three gates** and a **cell state**:

* **Forget Gate**: Decides what to forget
* **Input Gate**: Decides what to store
* **Output Gate**: Decides what to output
* **Cell State**: Carries memory











