

**LSTM's are a type of streamlined recurrent neural network aimed at solving the vanishing/exploding gradient problem that traditional recurrent networks have.**

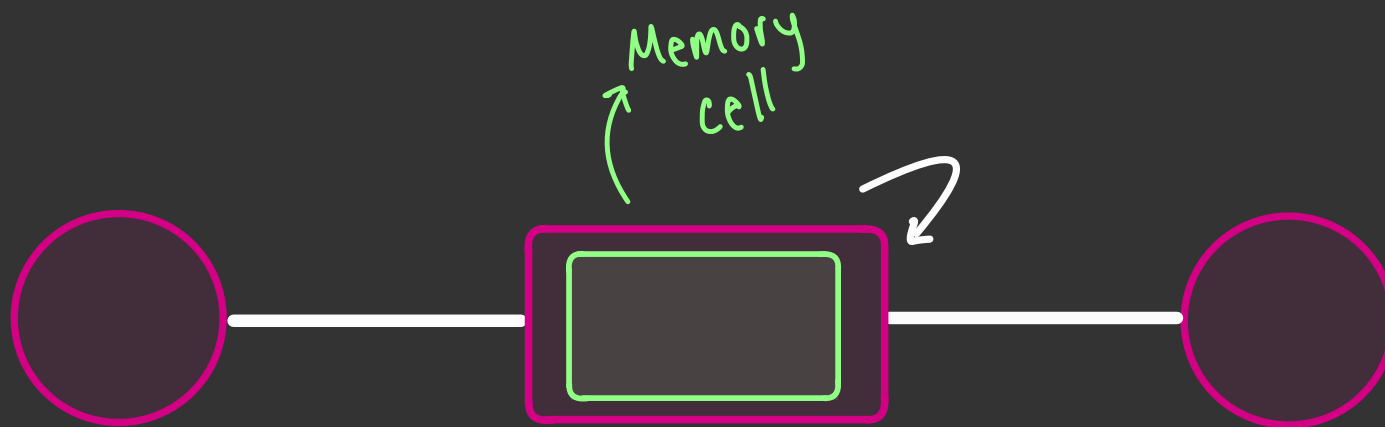
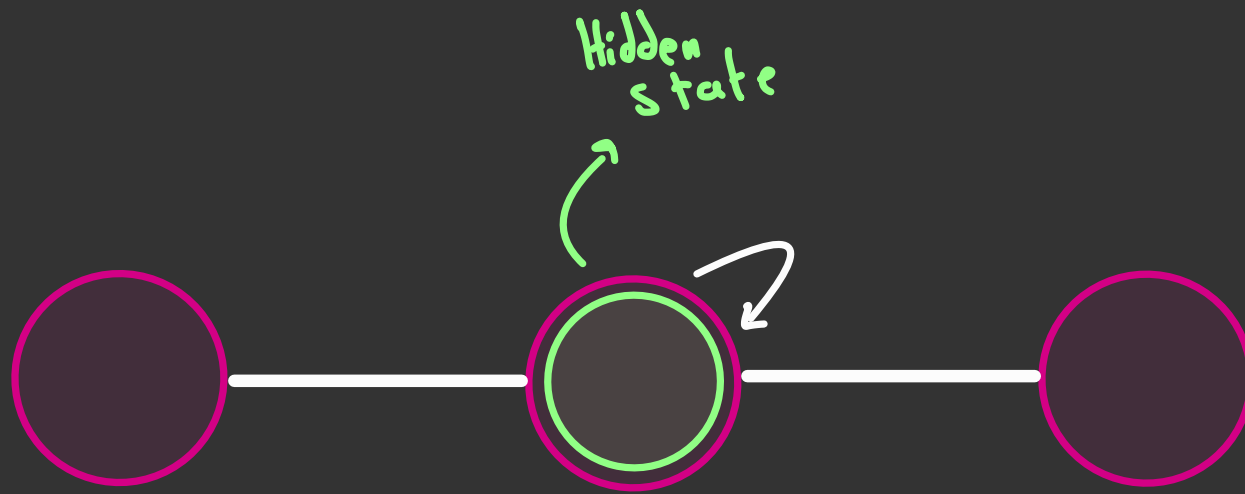
**They work essentially by modifying the RNN's hidden state and converting it into a memory cell, which has three gates:**

**Forget gate: in charge of deciding what we keep or discard from the previous cell state**

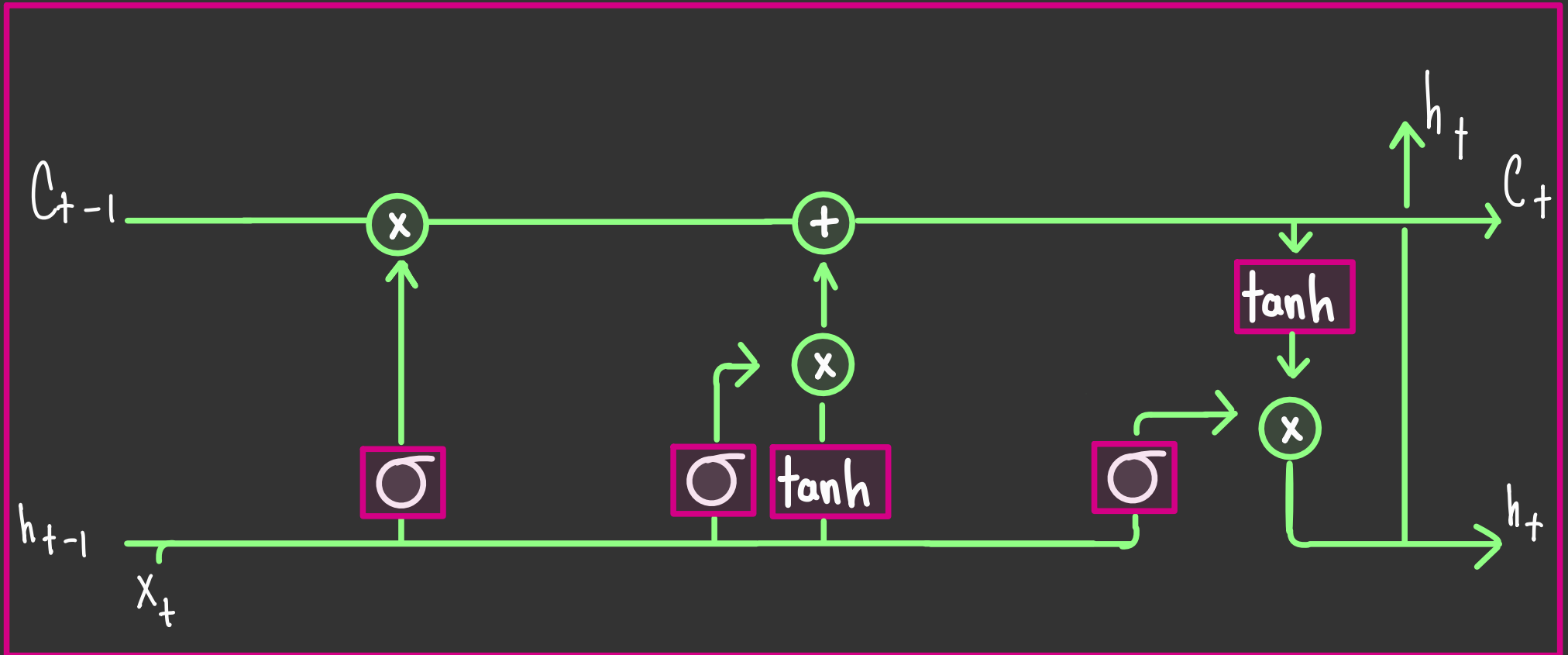
**Input gate: determines what new information should be added to the cell state**

**Output gate: determines the immediate cell output and serves as the new hidden state for the next time step**

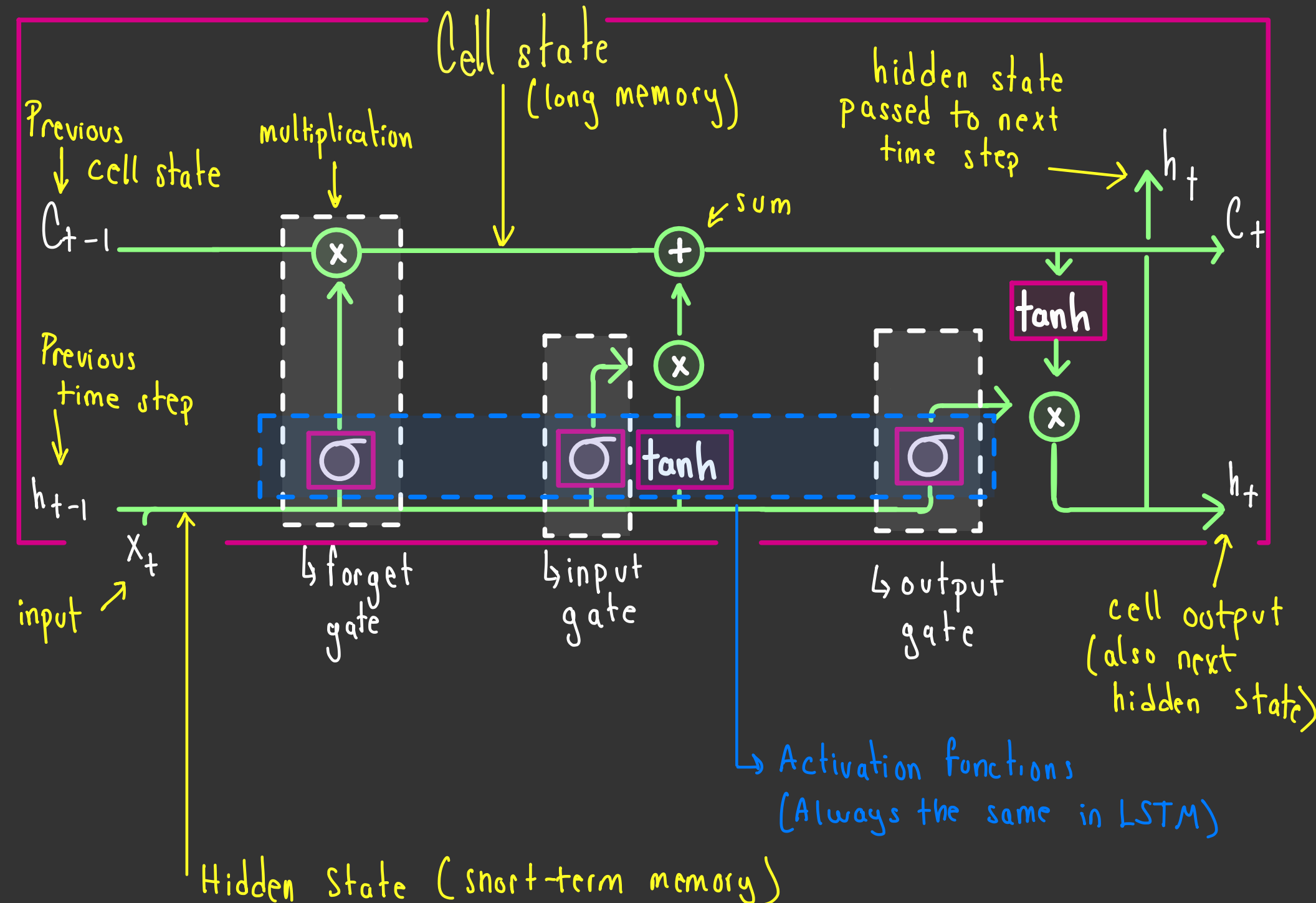
# Comparison to RNN



Inside the memory cell



# Inside the memory cell





Inside the memory cell

