LSTM
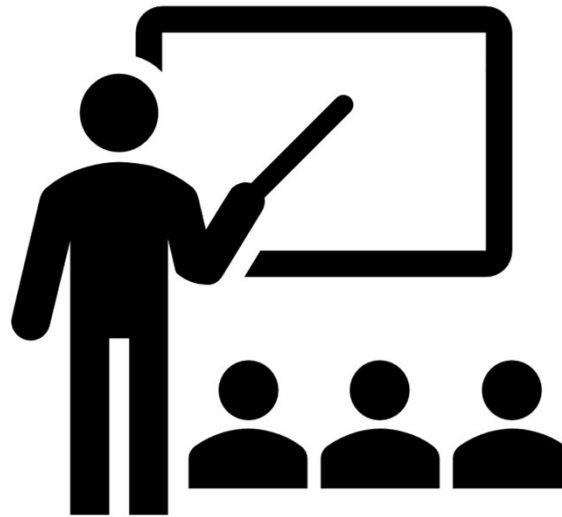
Long Short-Term Memory
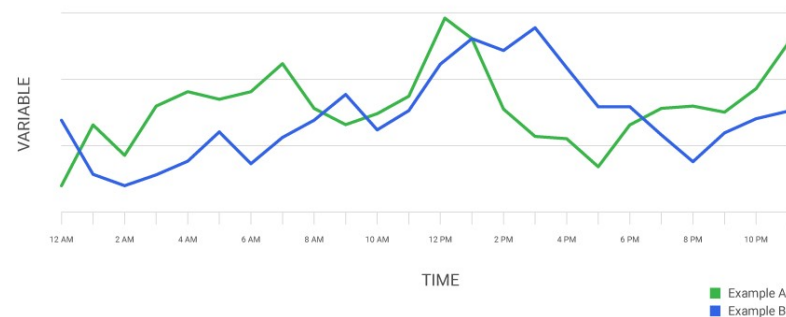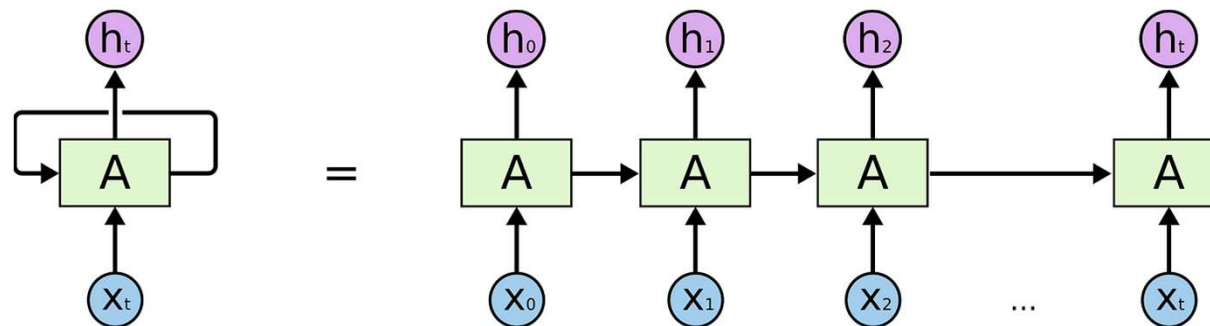
640315 sittikorn chaloemkittichai

The LSTM fix trouble RNN

Recurrent Neural Network

One type of ANN (Artificial Neural Network)

Time series data

Recurrent Neural Network

Example : Predict color of the A equip shirt each day

There are red , blue , green shirt.

Recurrent Neural Network

Example : Predict color of the A equip shirt each day

There are red , blue , green shirt.

RNN

Recurrent Neural Network

Example : Predict color of the A equip shirt each day

There are red , blue , green shirt.

RNN

Recurrent Neural Network

Example : Predict color of the A equip shirt each day
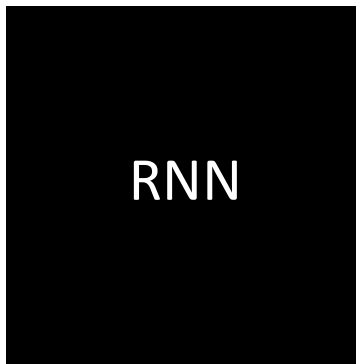
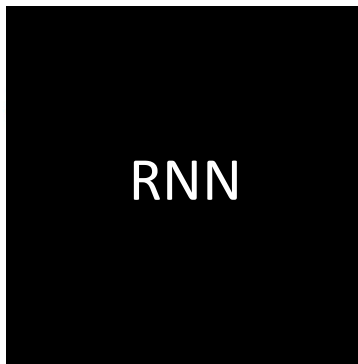There are red , blue , green shirt.

RNN

Recurrent Neural Network

Example : Predict color of the A equip shirt each day

There are red , blue , green shirt.

RNN

Recurrent Neural Network

Example : Predict color of the A equip shirt each day

There are red , blue , green shirt.

RNN

+
New data

Recurrent **N**eural **N**etwork

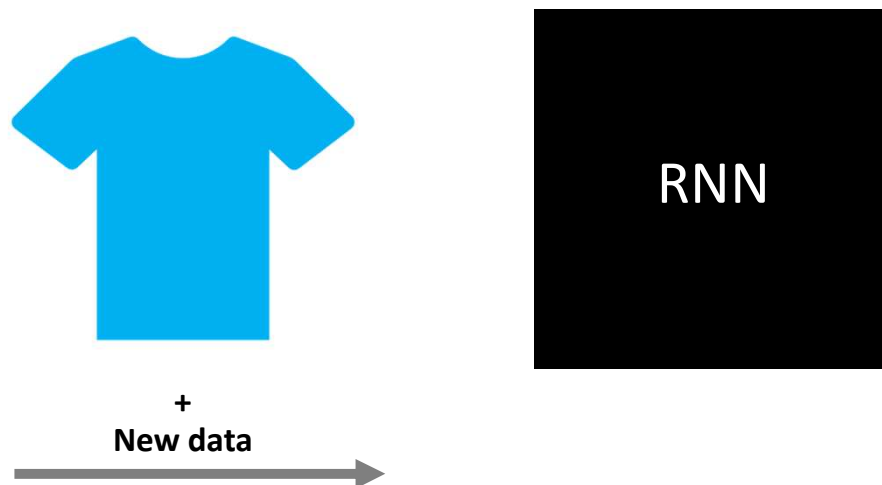**Example : Predict color of the A equip shirt each day**

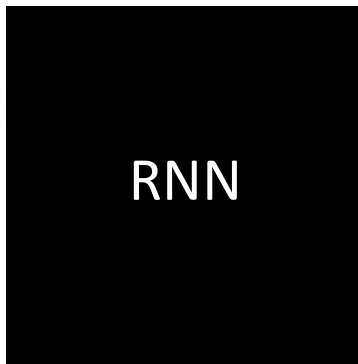**There are red , blue , green shirt.**

RNN

Recurrent Neural Network

Example : Predict color of the A equip shirt each day

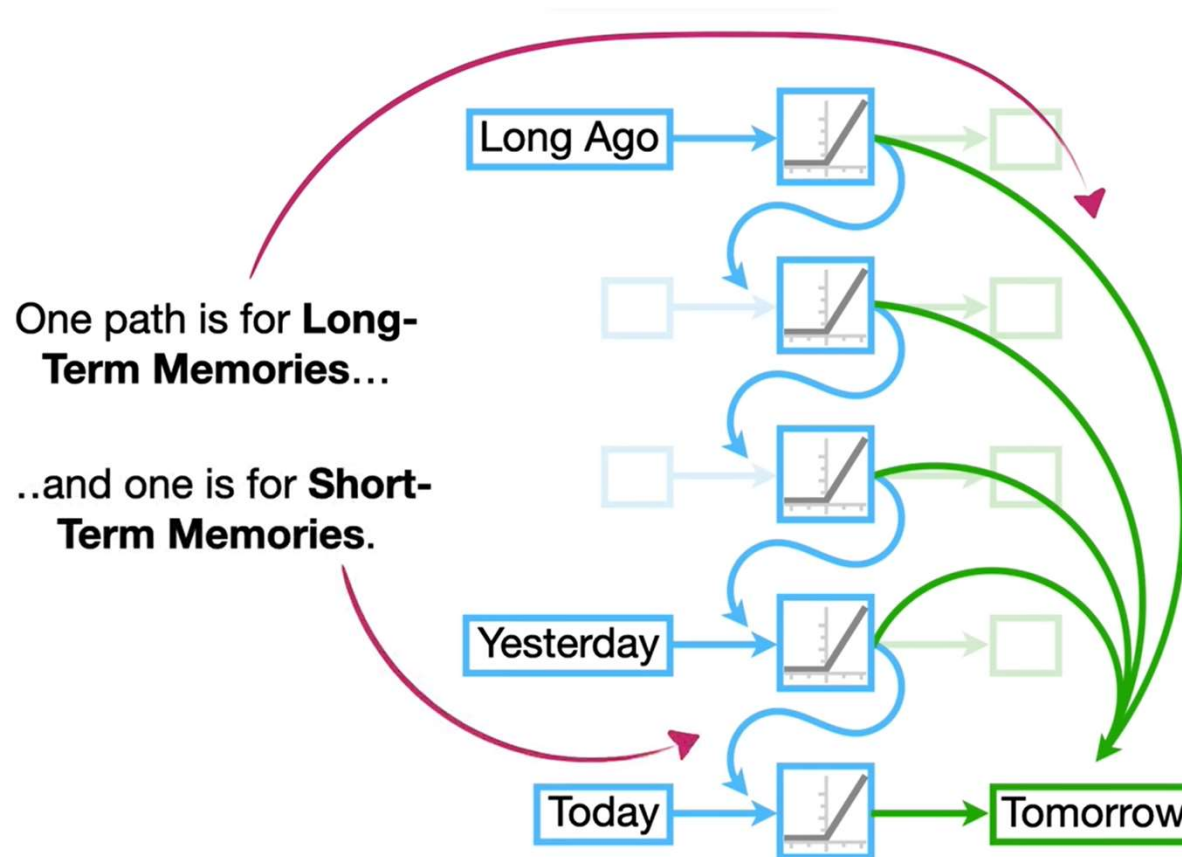There are red , blue , green shirt.
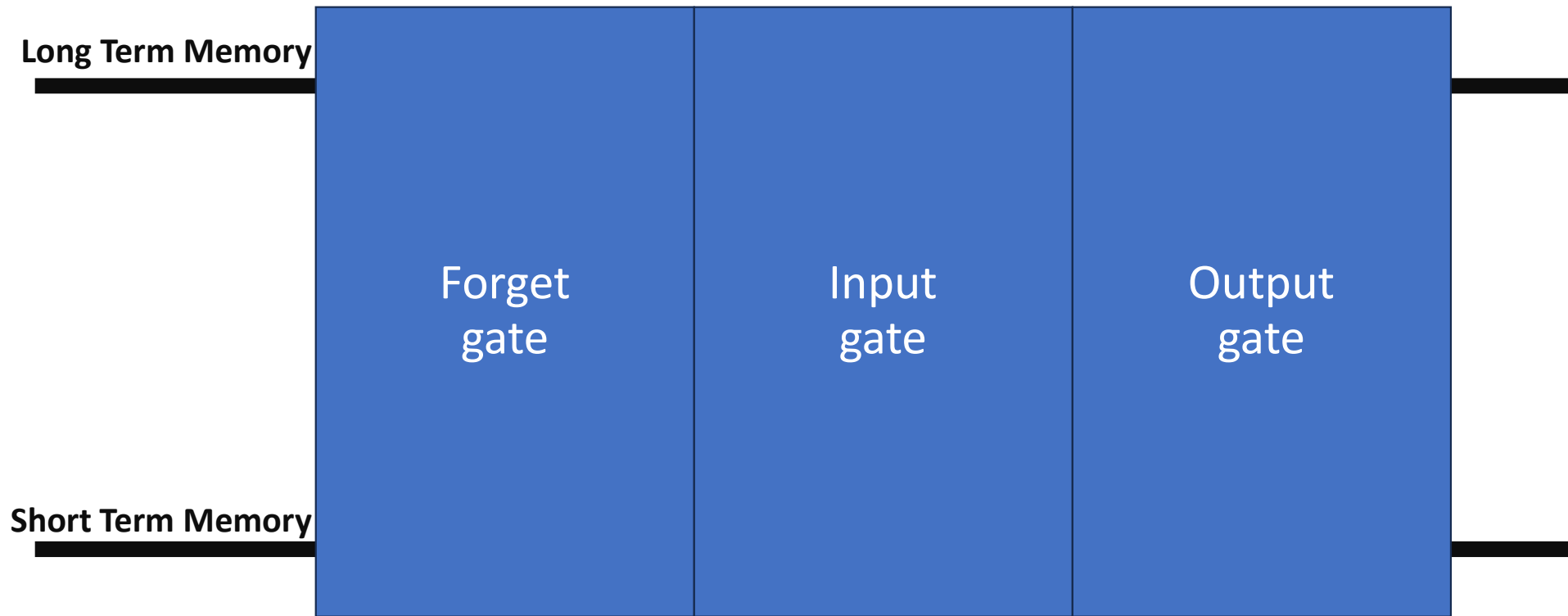
RNN

Recurrent Neural Network

!Problem : Can not remember 2 ago

+
New data

RNN

Long Short-Term Memory

One path is for **Long-Term Memories**…

..and one is for **Short-Term Memories**.

Long Ago

Yesterday

Today

Tomorrow

Long Short-Term Memory

Long Term Memory

Short Term Memory

Forget gate

Input gate

Output gate

Long Short-Term Memory

Long Term Memory ──────── x ──────────────────────────────

Input gate

Output gate

sigmoid

+ bias

Short Term Memory x weight ── sum ──────────────────────

x weight

input

Long Short-Term Memory

Long Term Memory ——— x ——————— + ———————

Output gate

sigmoid

x

sigmoid   Tanh

Short Term Memory | x weight | + bias
sum | x W | + b
sum | x W | + b
sum

x weight   x W   x W

input

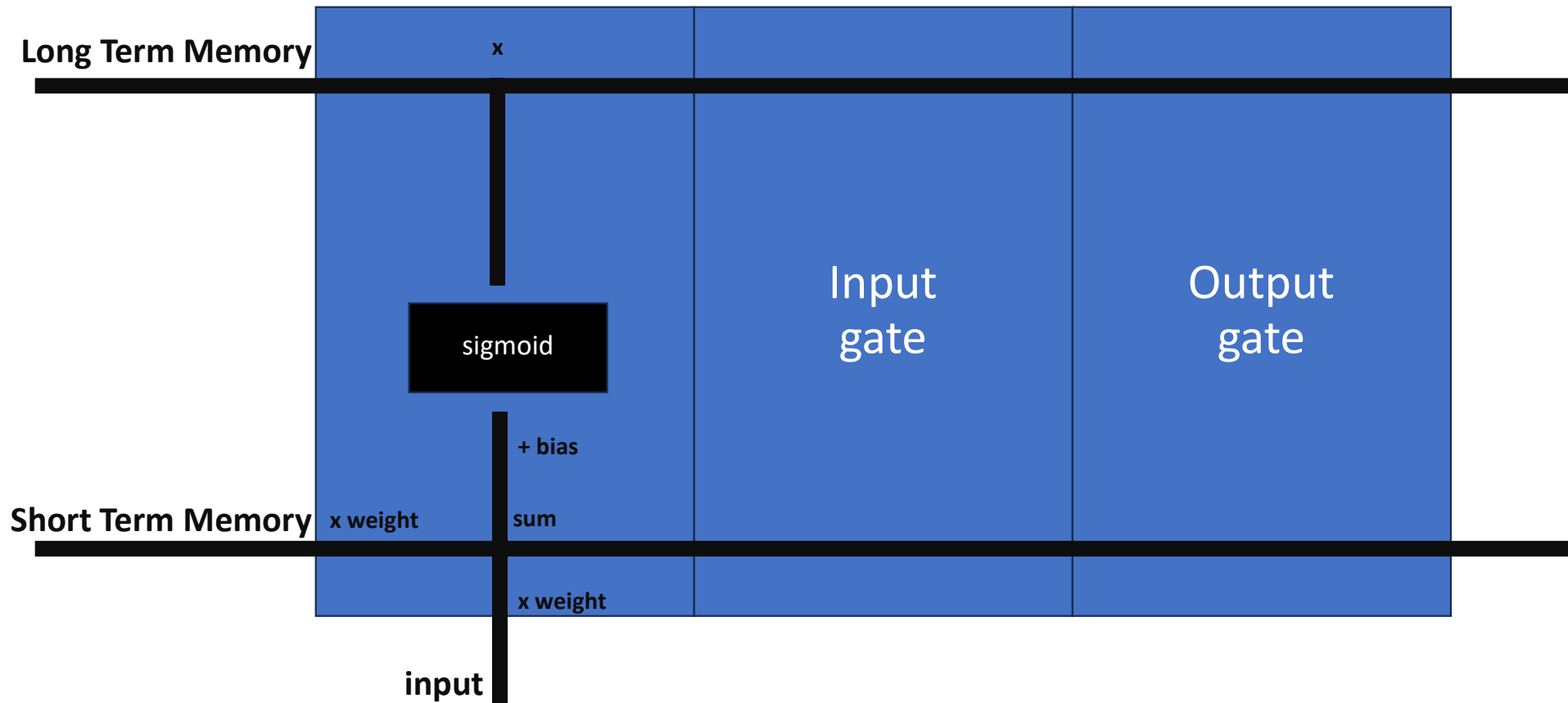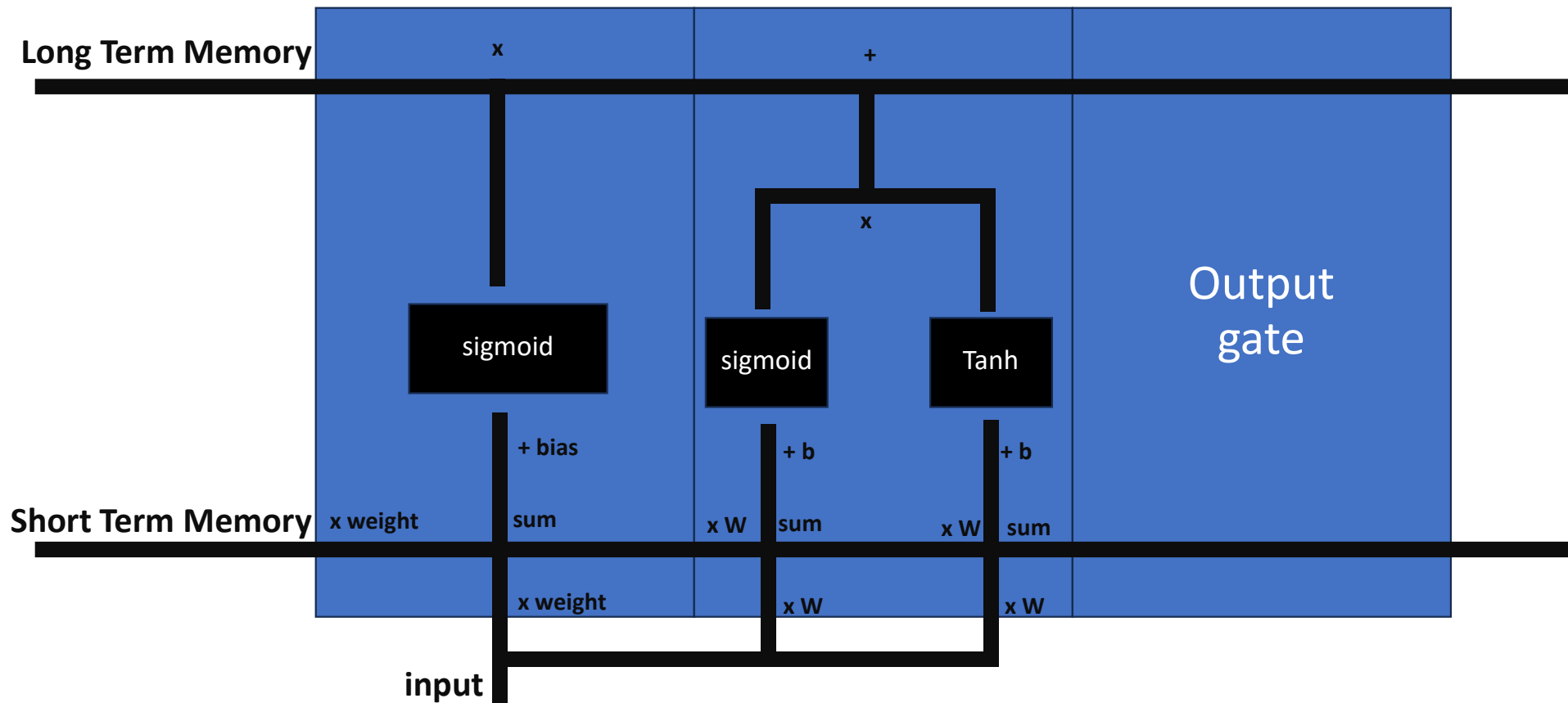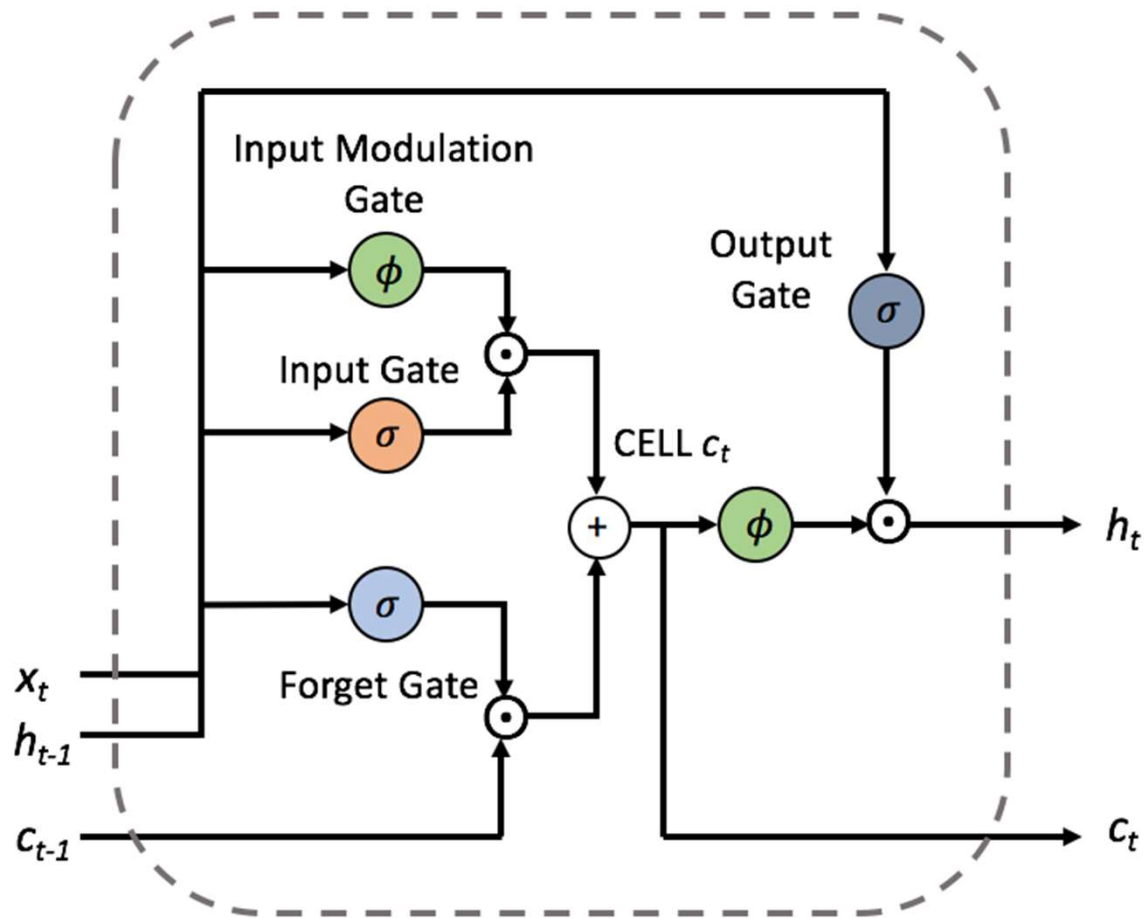# Long Short-Term Memory
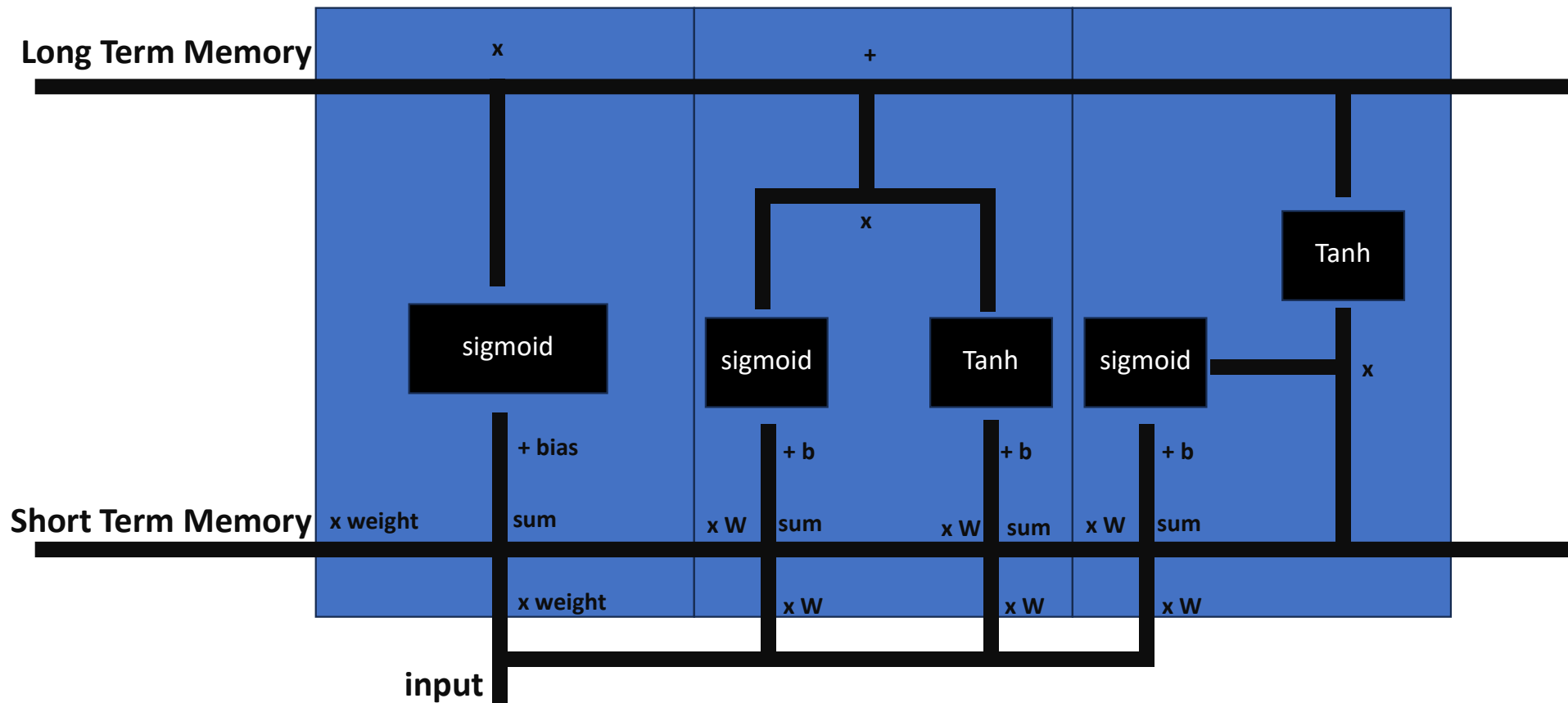
Long Short-Term Memory

Long Short-Term Memory

Predict stock goods

Day	Values
1	0
2	0.5
3	0.25
4	1
5	0

Long Short-Term Memory

Predict stock goods

Day	Values
1	0
2	0.5
3	0.25
4	1
5	?

Long Short-Term Memory

Day	Values
1	0
2	0.5
3	0.25
4	1
5	?

Long Short-Term Memory

Day	Values
1	0
2	0.5
3	0.25
4	1
5	?

Long Short-Term Memory

Day	Values
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2	0.5
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Long Short-Term Memory

Day	Values
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