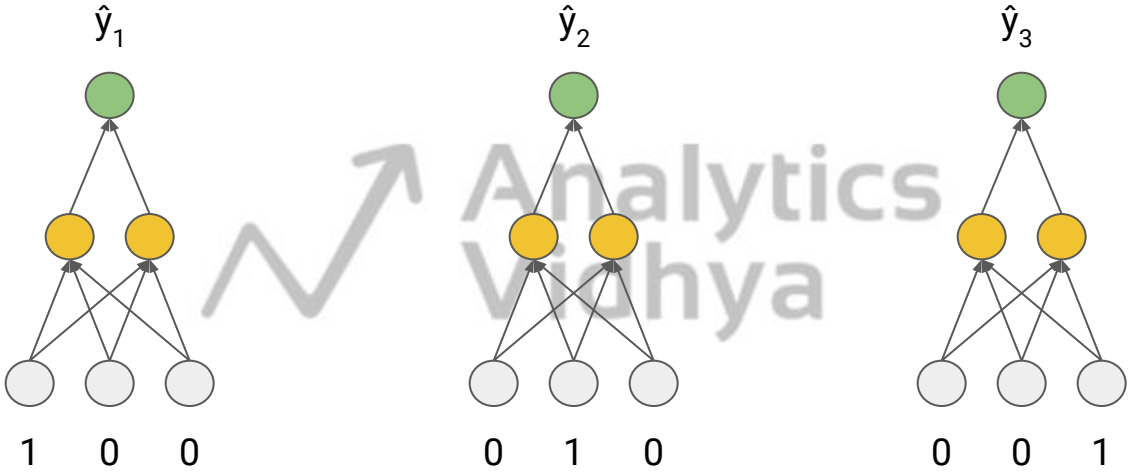
Recap of RNN / LSTM / GRU

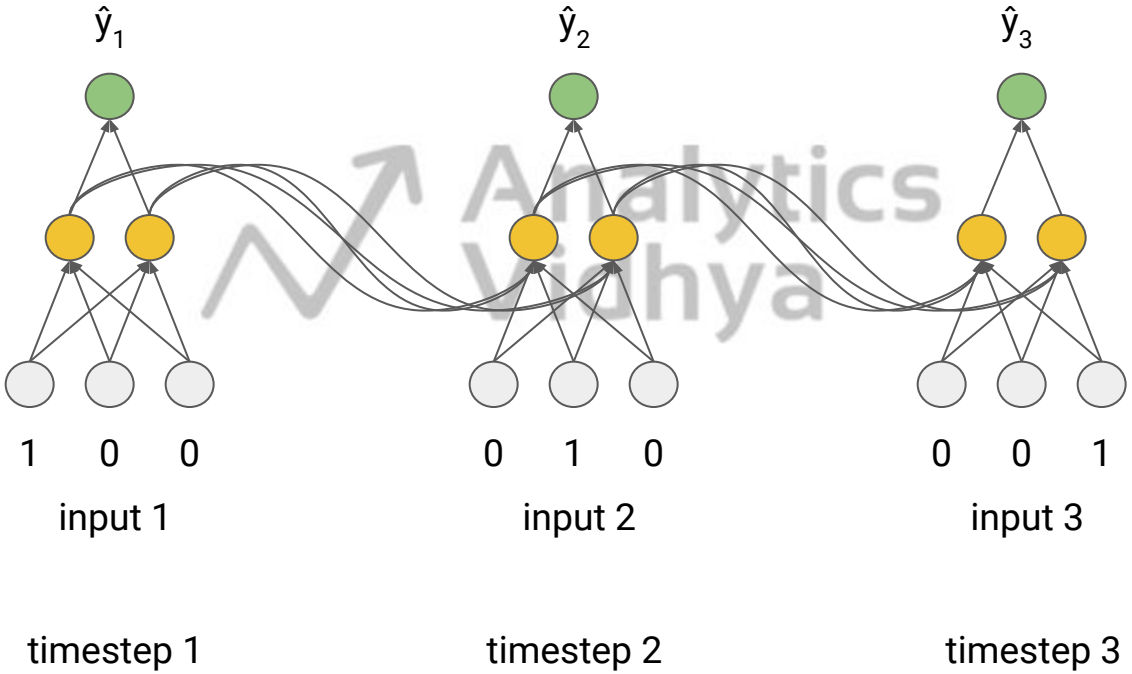
Analytics Vidhya

Recap - RNN Architecture



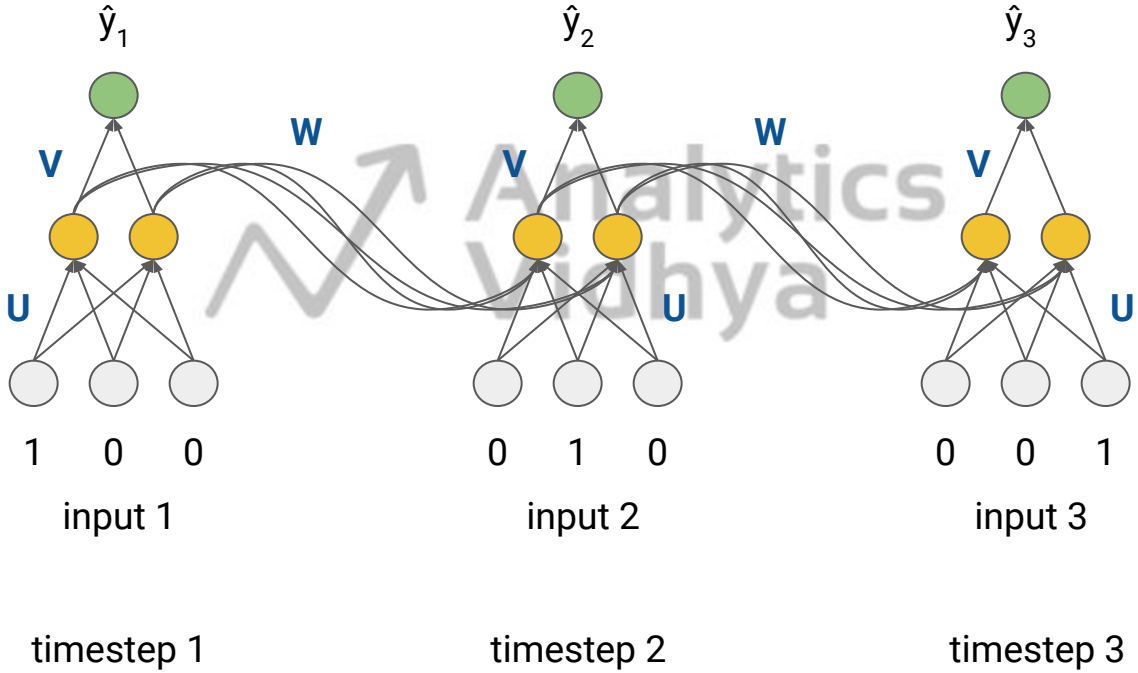
Analytics Vidhya

Recap - RNN Architecture



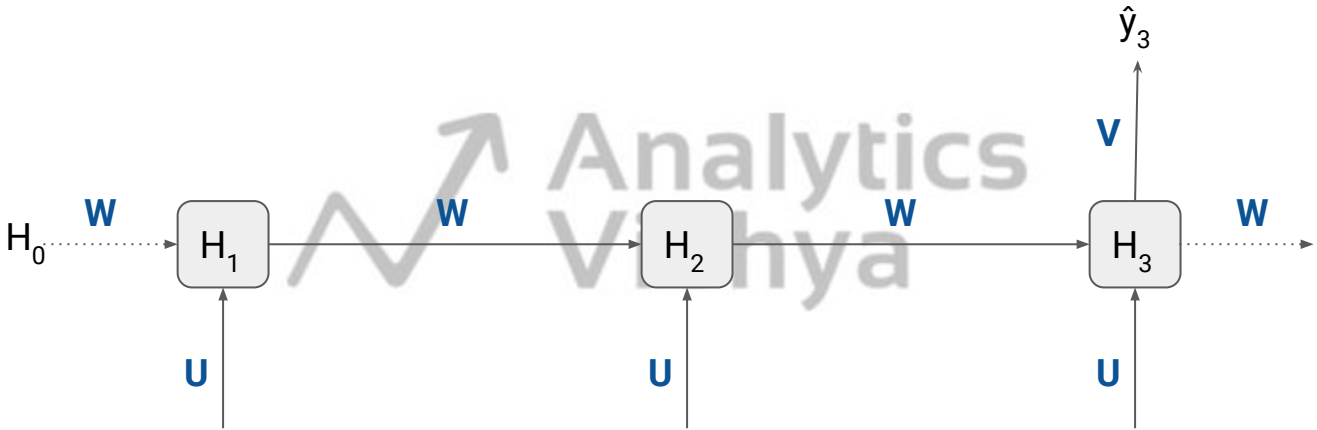
Analytics Vidhya

Recap - RNN Architecture



Analytics Vidhya

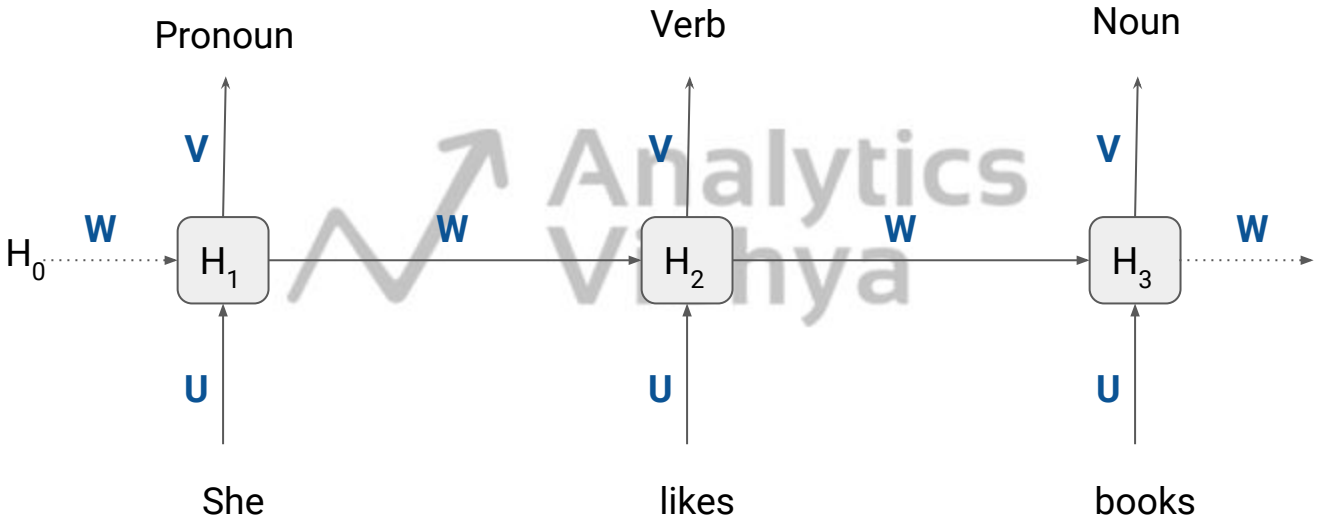
Recap - RNN Architecture Variants



many-to-one

Analytics Vidhya

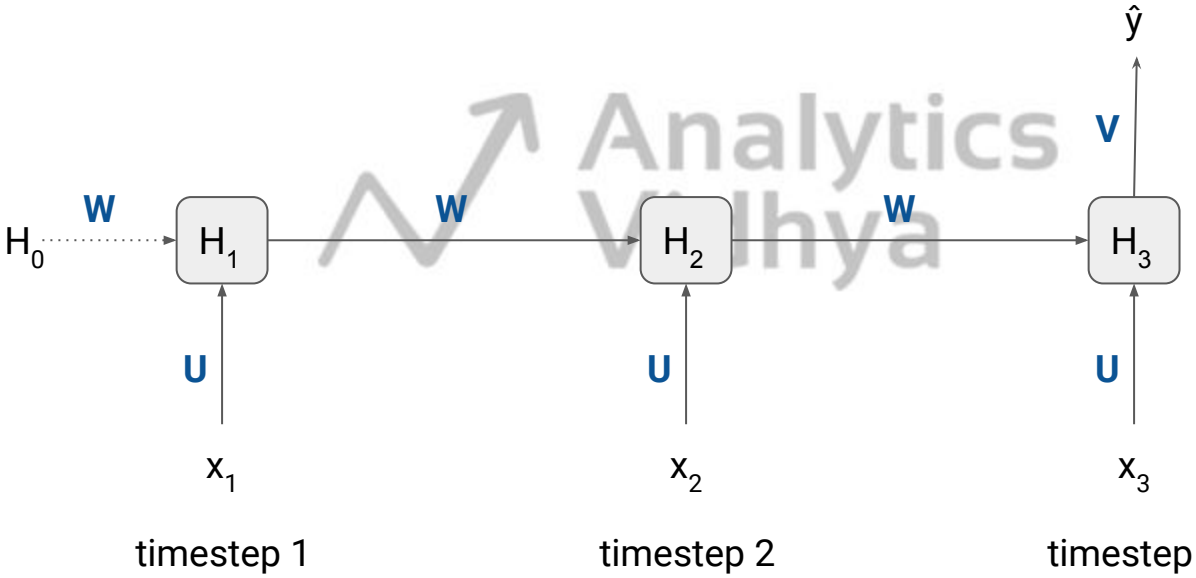
Recap - RNN Architecture Variants



many-to-many

Analytics Vidhya

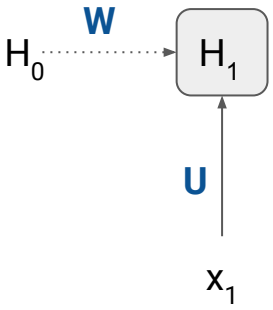
Recap - Forward Propagation in RNN



Analytics Vidhya

Recap - Forward Propagation in RNN

$H_1 = g(W.H_0 + Ux_1)$

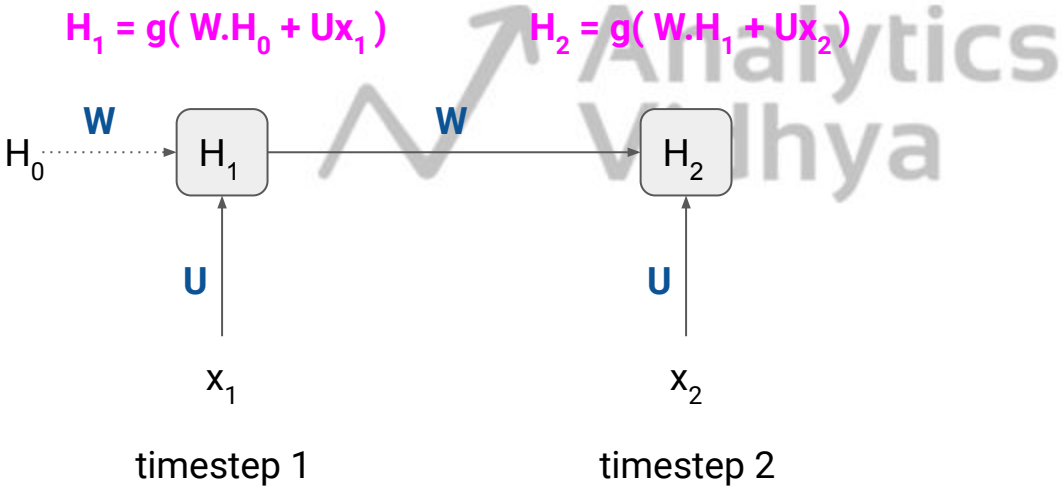


timestep 1

Analytics Vidhya

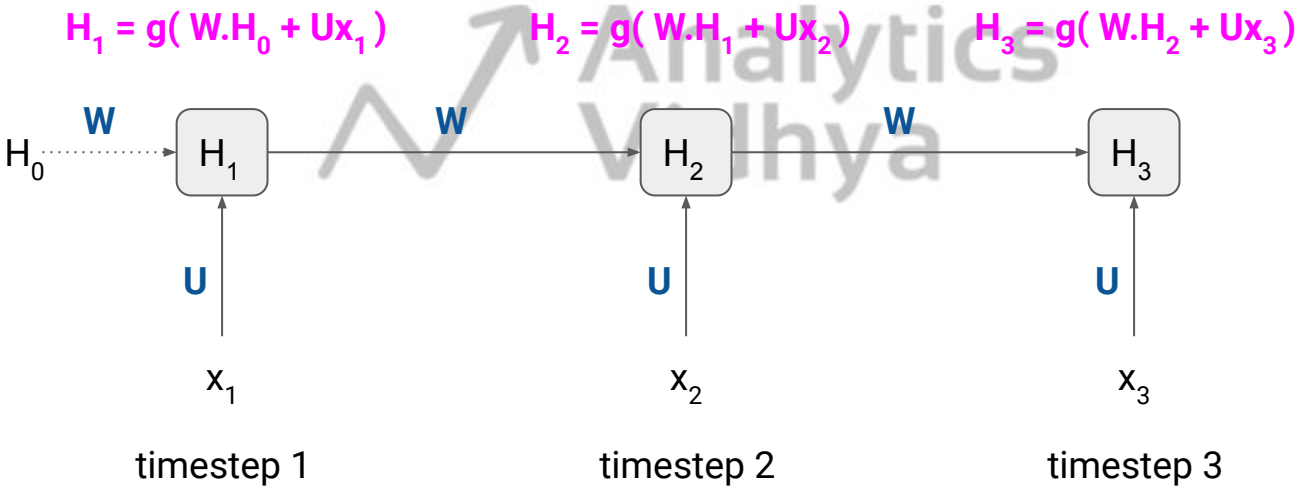
Analytics Vidhya

Recap - Forward Propagation in RNN



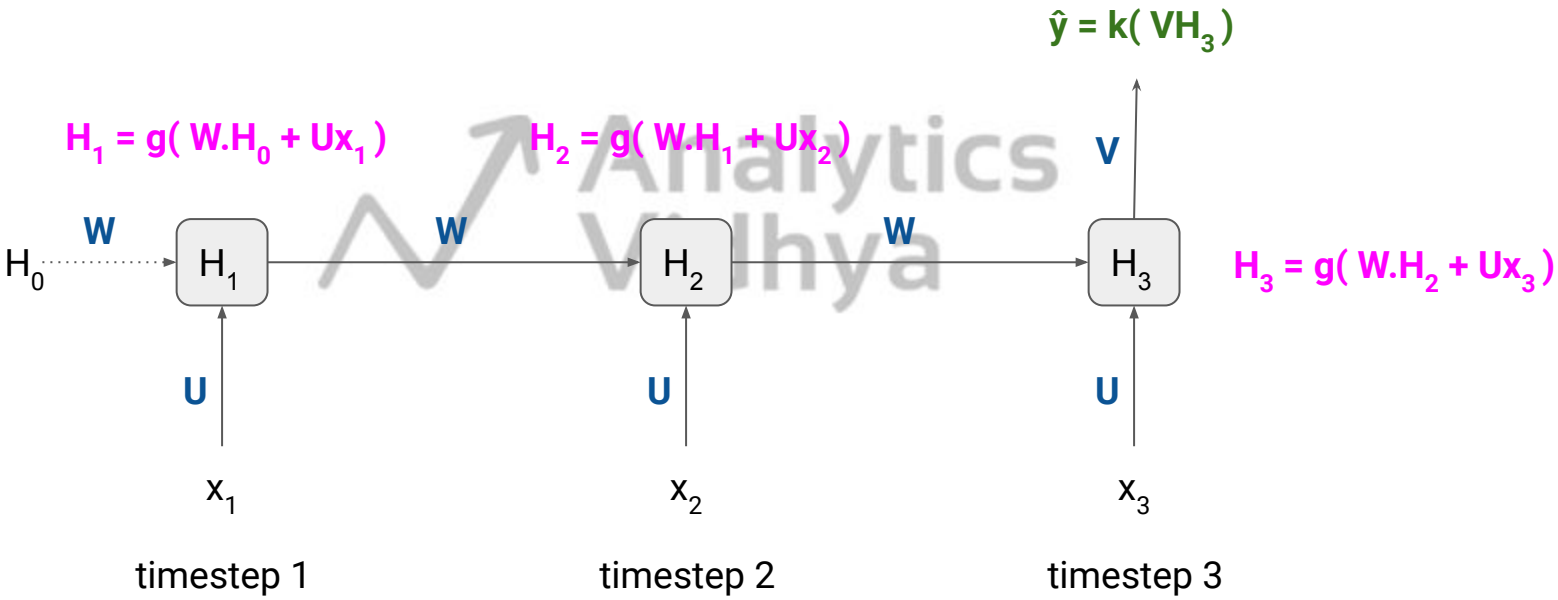
Analytics Vidhya

Recap - Forward Propagation in RNN



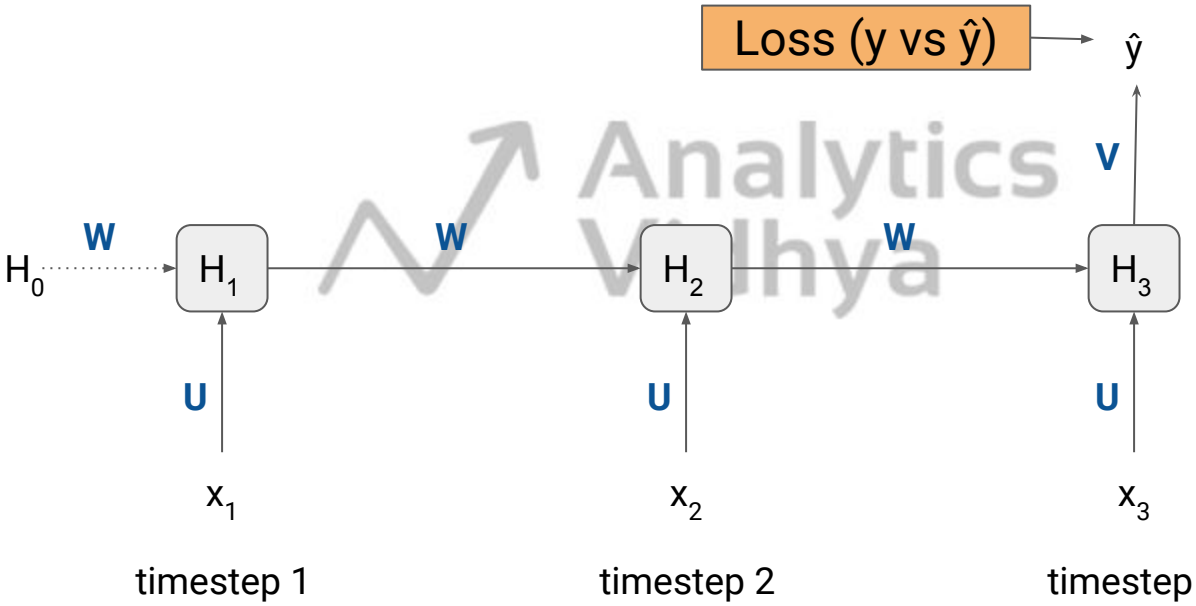
Analytics Vidhya

Recap - Forward Propagation in RNN



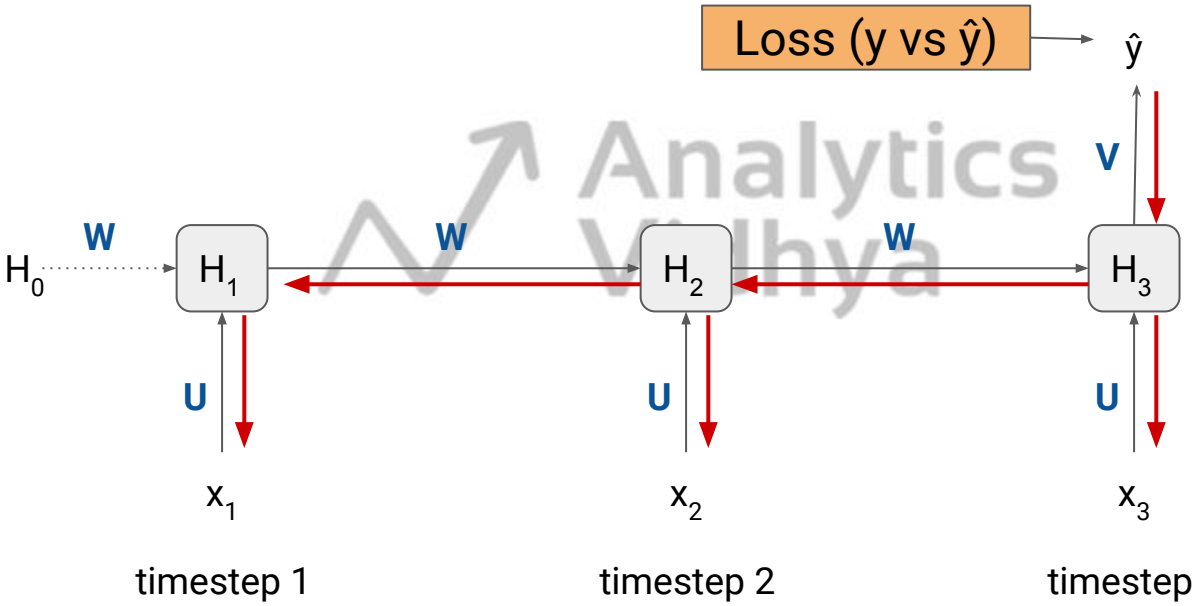
Analytics Vidhya

Recap - Back Propagation in RNN



Analytics Vidhya

Recap - Back Propagation in RNN



Analytics Vidhya

Recap - Issues with RNN

- **Vanishing Gradient**

  RNN does not perform well for long sentences

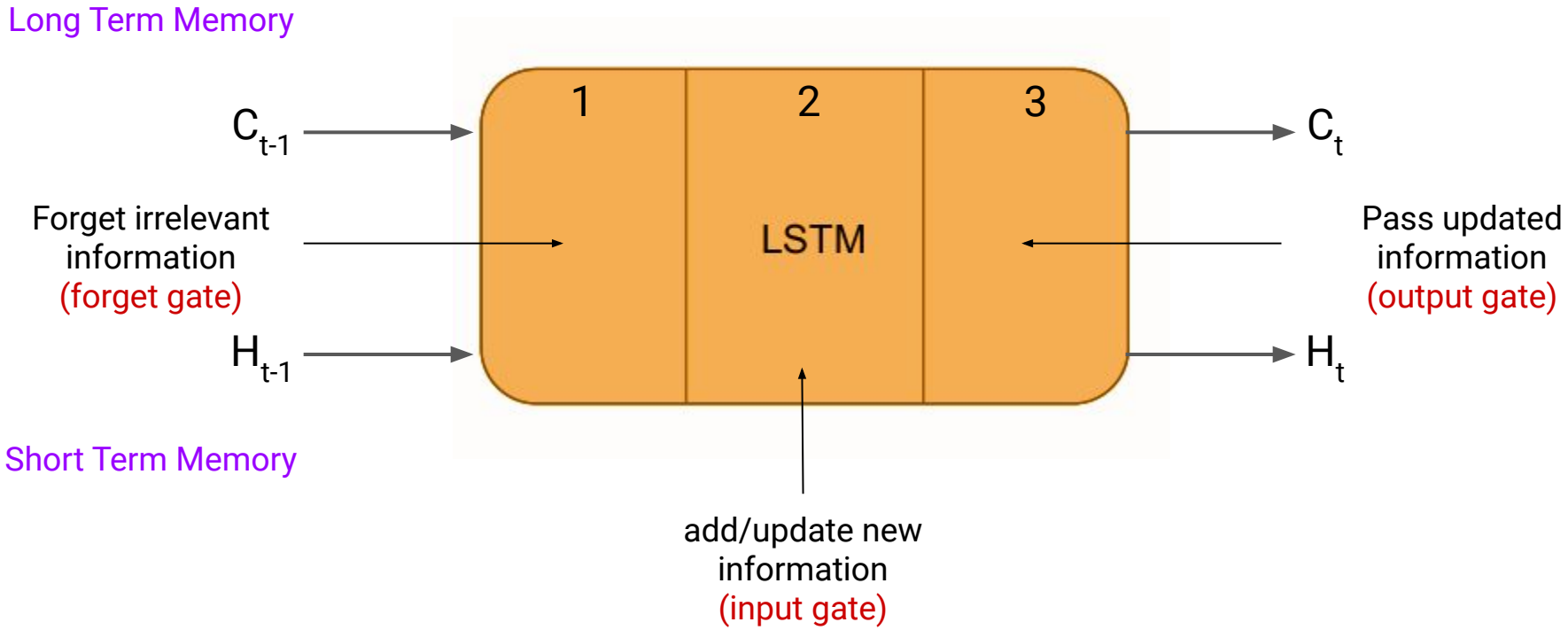
- **Exploding Gradient**

  - Gradients are large
  - Poor predictions

Analytics Vidhya

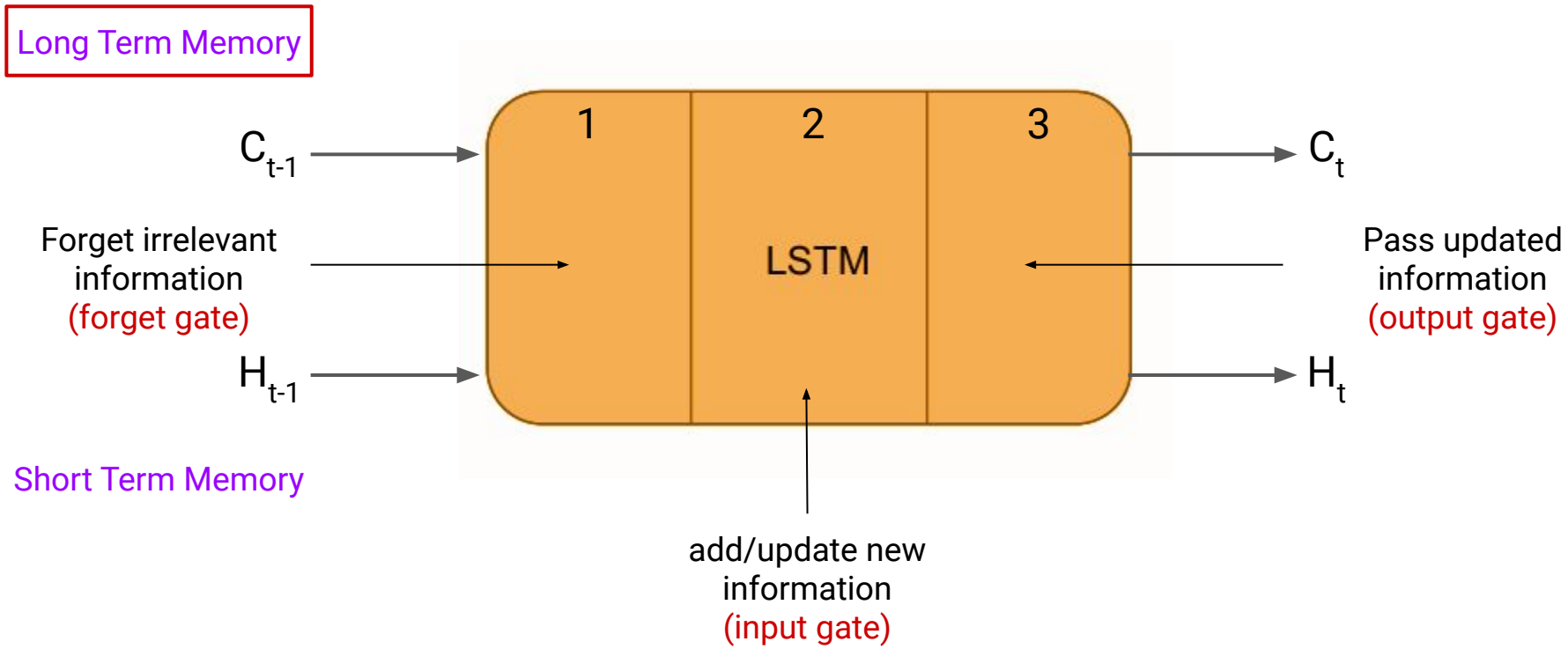
Analytics Vidhya

Recap - LSTM



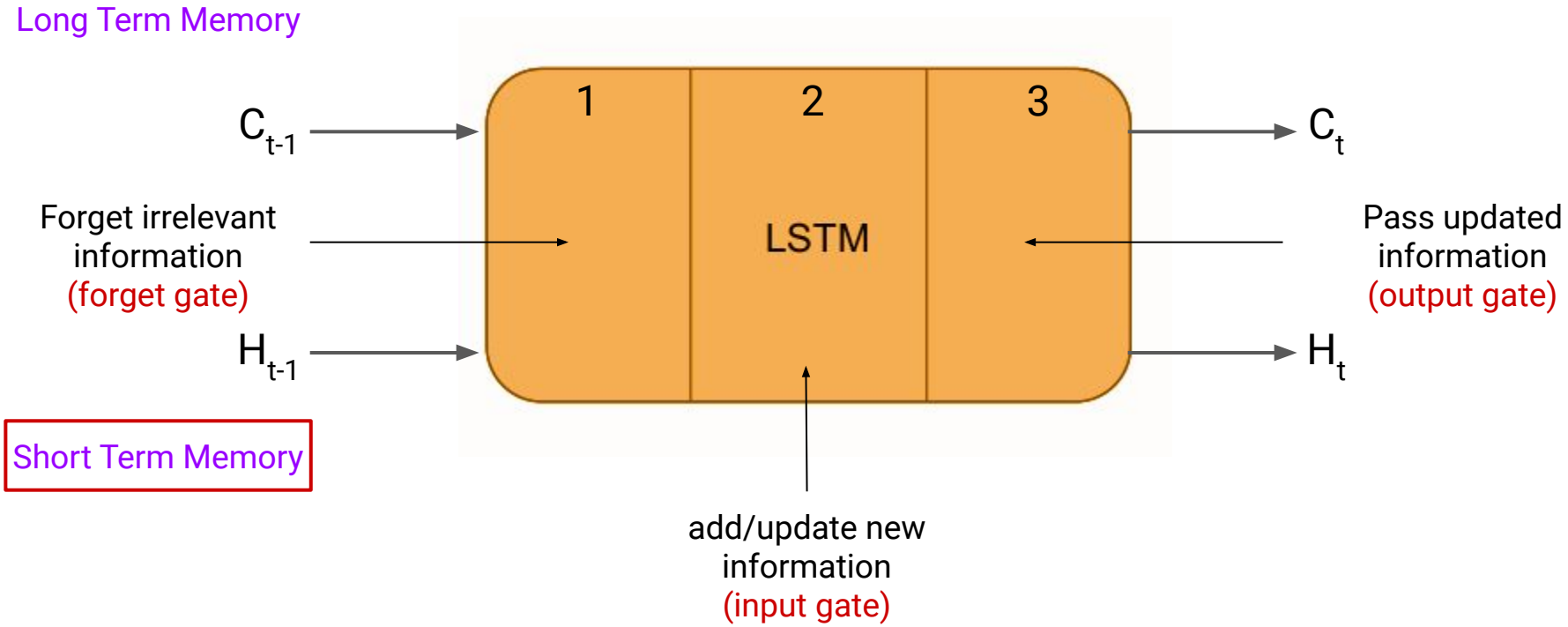
Analytics Vidhya

Recap - LSTM



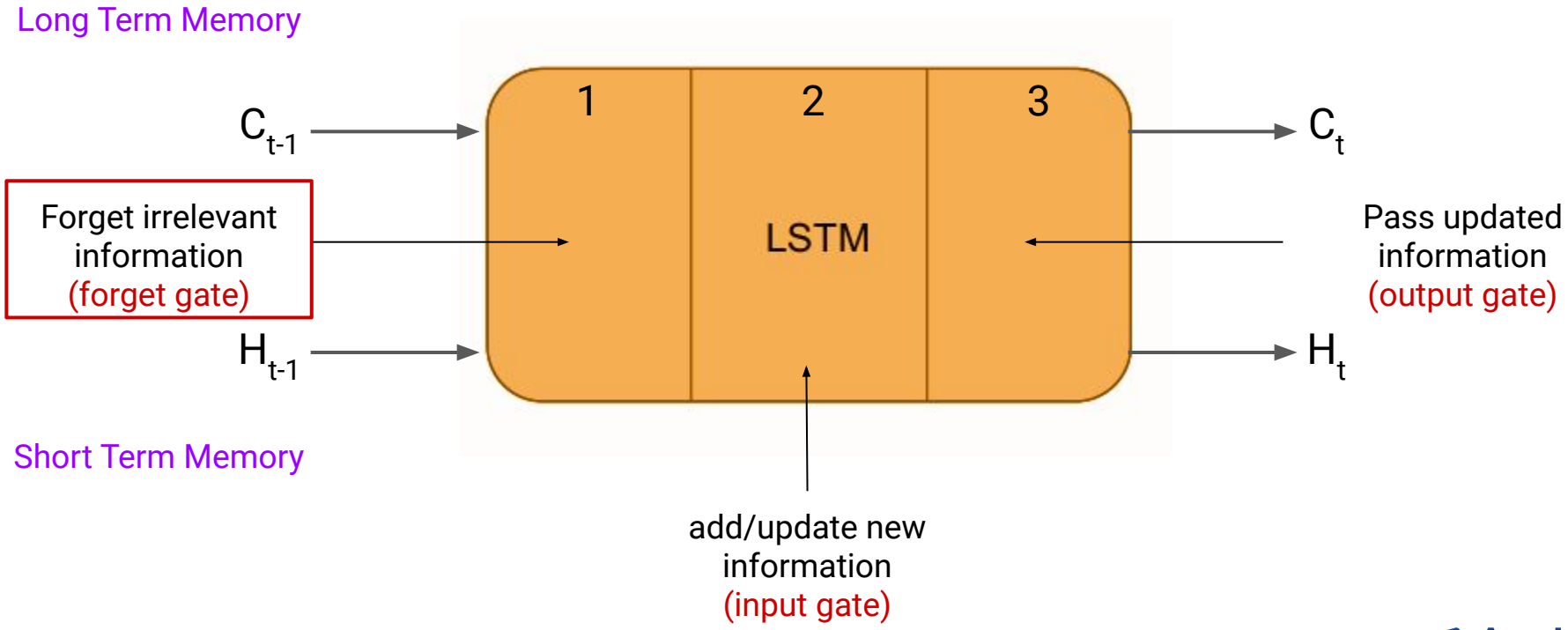
Analytics Vidhya

Recap - LSTM



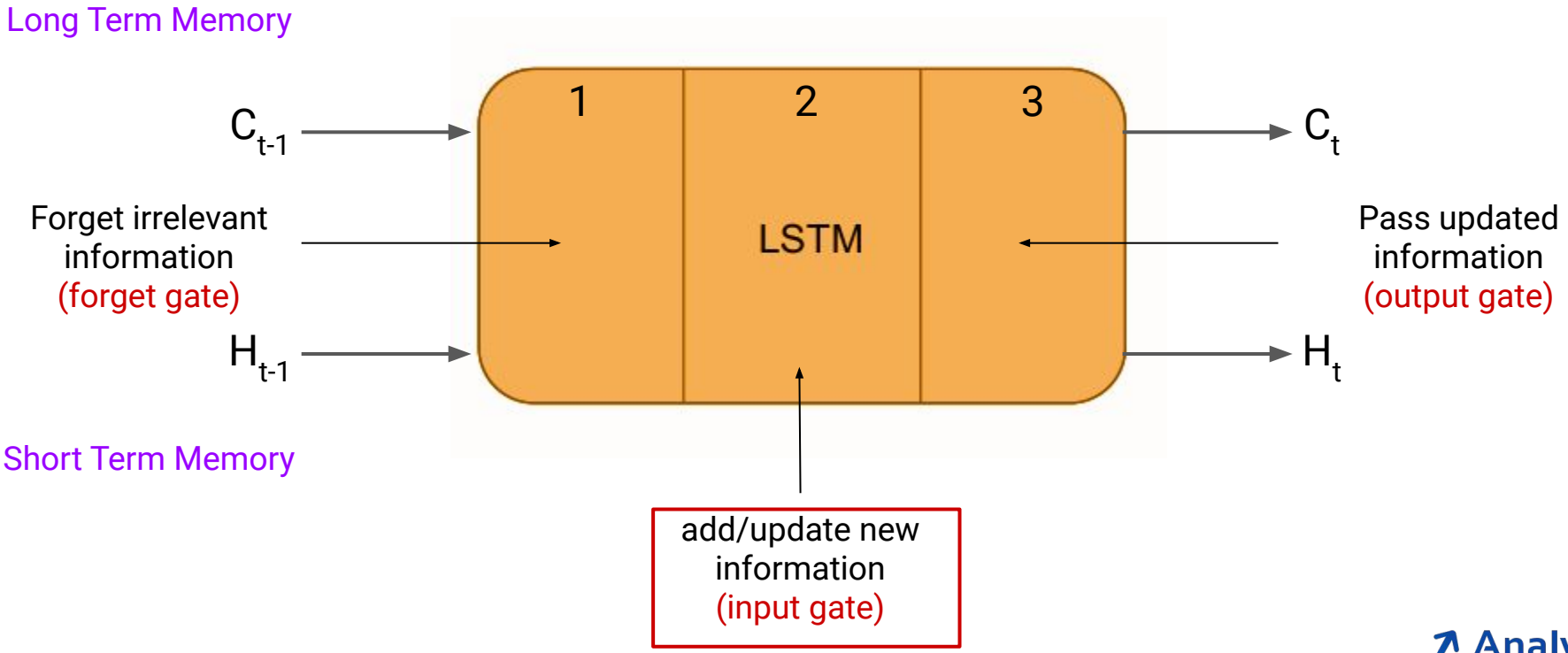
Analytics Vidhya

Recap - LSTM



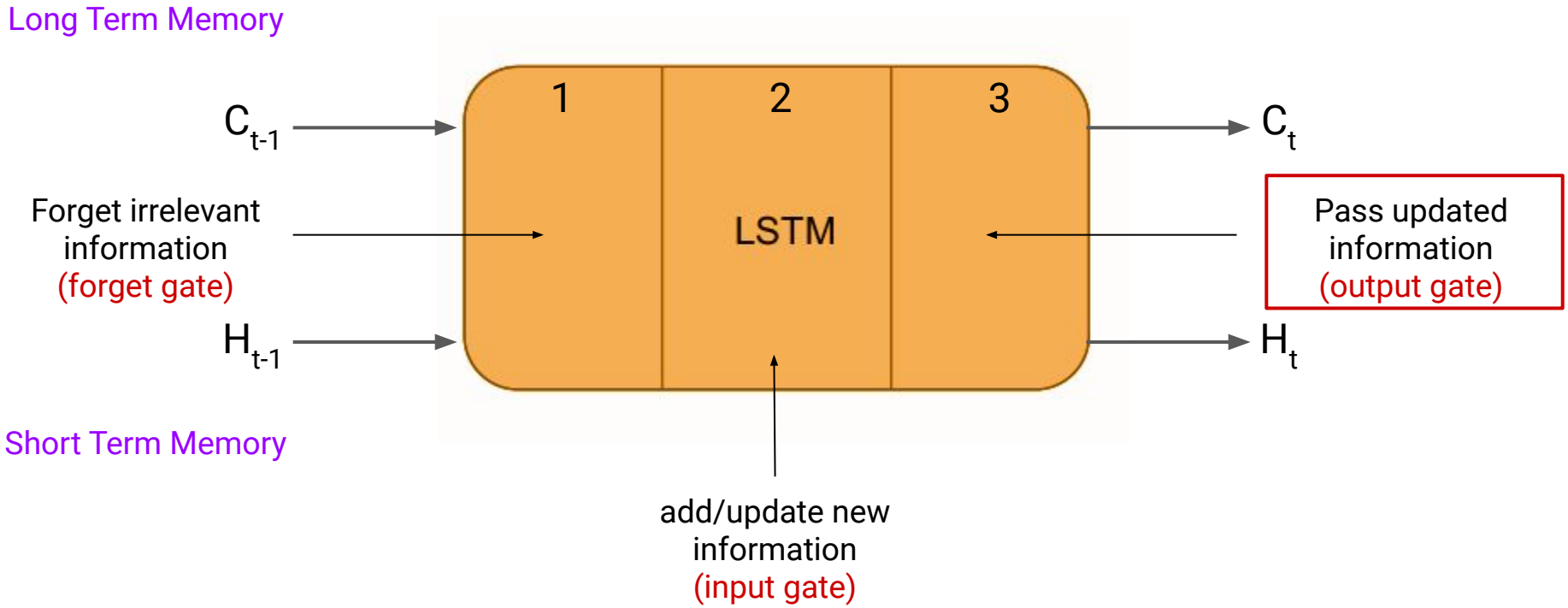
Analytics Vidhya

Recap - LSTM



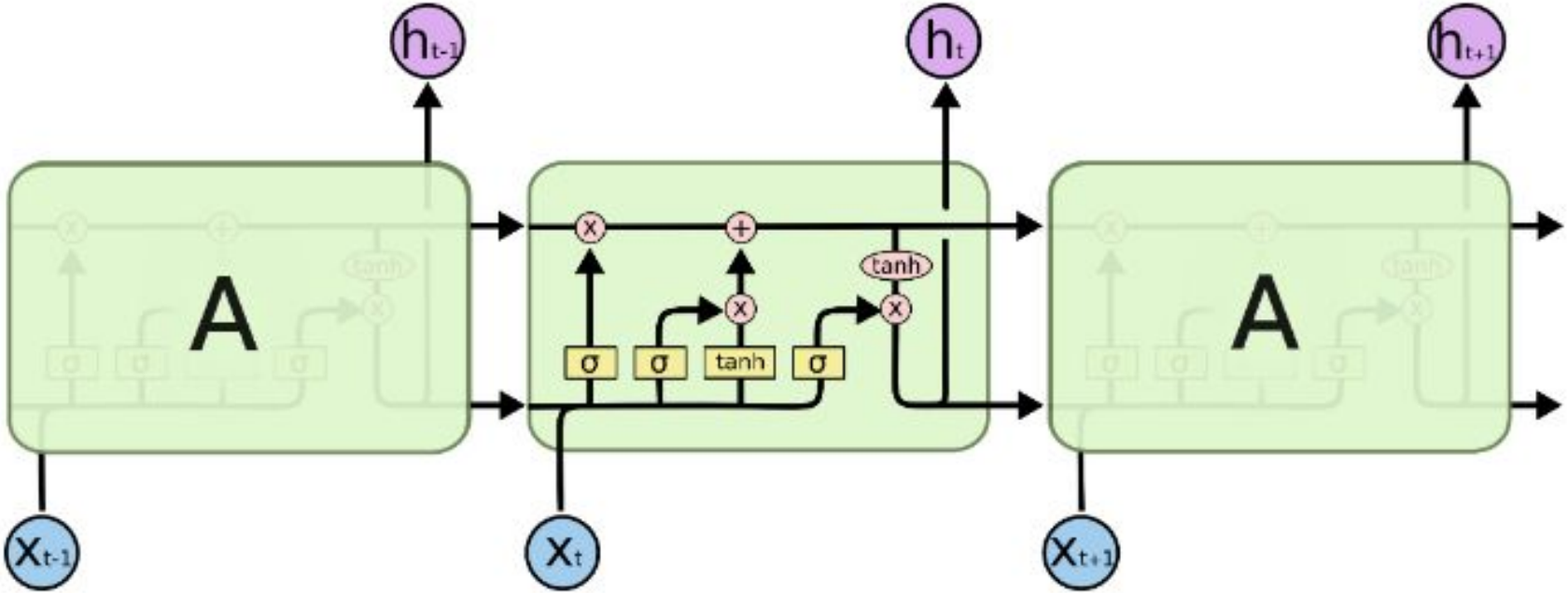
Analytics Vidhya

Recap - LSTM



Analytics Vidhya

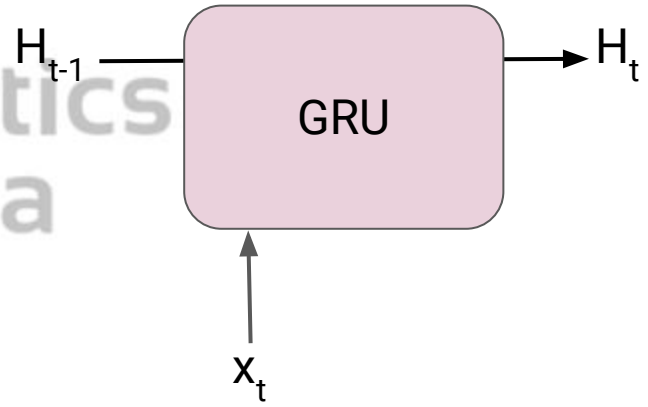
Recap - LSTM



Analytics Vidhya

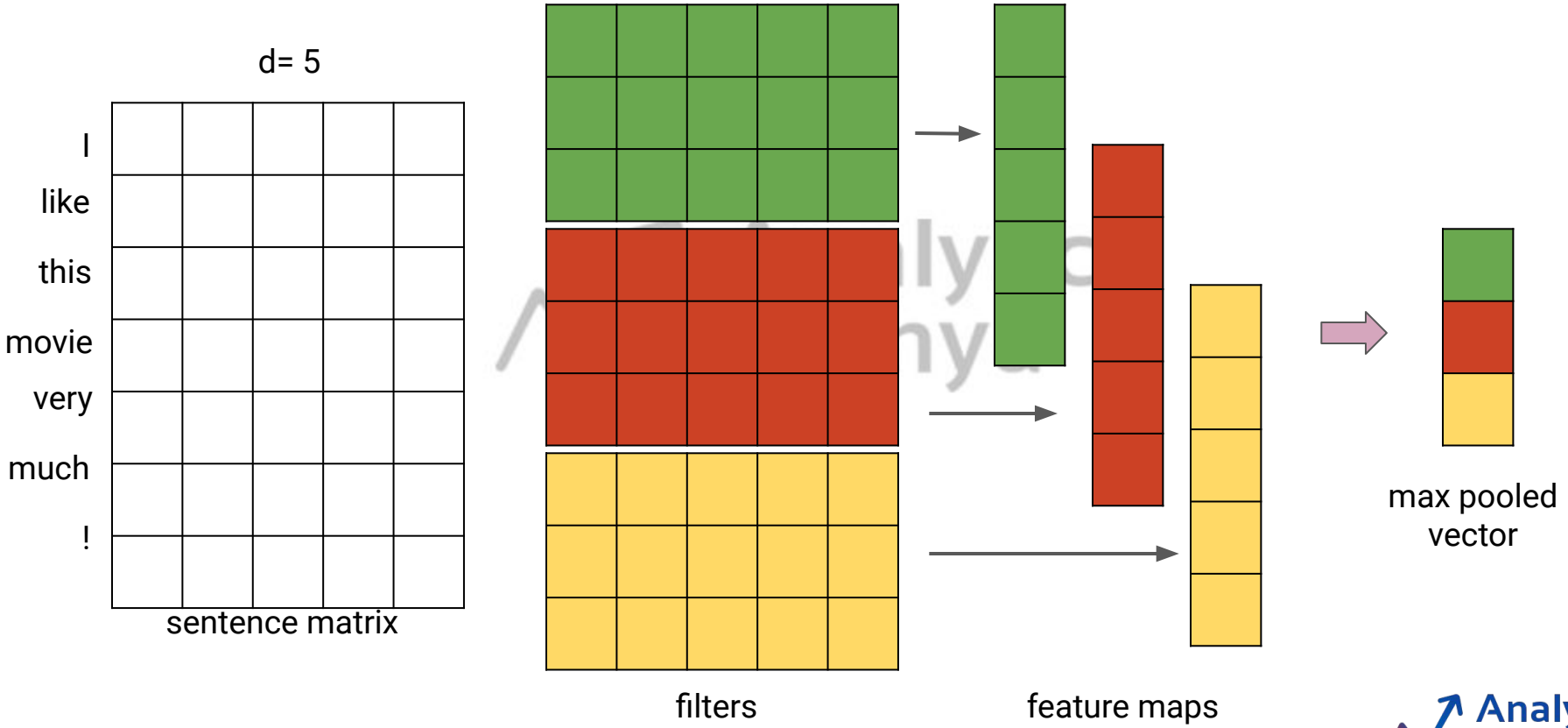
Recap - GRU

- Reset Gate (short-term memory)
- Update Gate (long-term memory)
- Simpler alternative to LSTM (fewer gates)
- Faster training



Analytics Vidhya

Recap - CNN 1-D



Analytics Vidhya

Projects

Auto-Tagging StackExchange Queries

Analytics Vidhya

Projects

StackExchange

Auto-Tagging StackExchange Queries

Web Traffic Forecasting

Analytics Vidhya

Projects

StackExchange

Auto-Tagging StackExchange Queries

Web Traffic Forecasting

Audio Classification for Emergency Vehicle Detection

Analytics Vidhya

Thank You

Analytics
Vidhya