LSTM - Long Short Term Memory

Successor - RNN(Recurrent Neural Network)
Input - One by one Token is passed
Output - Token
Advantage - Overcome Exploding and vanishing gradient Descent. It holds memory(context)
Disadvantage - Cannot remember longer context

Application - Time Series, Next Token prediction (WhatsApp, Gmail), Sentiment Analysis, Text Classification

Sequence to Sequence Model (Seq2Seq): Encoder Decoder Model

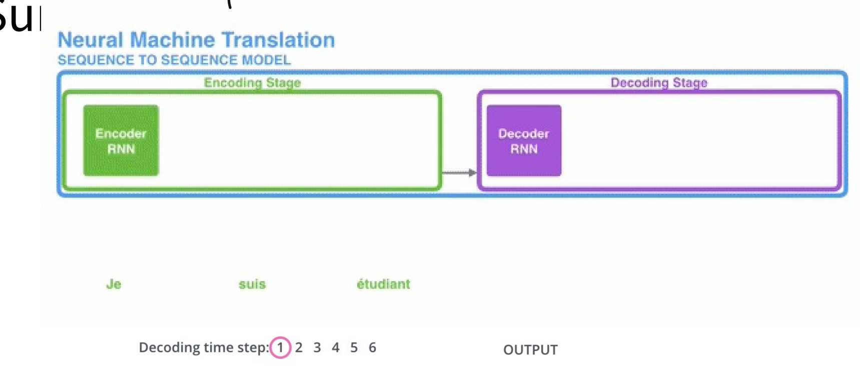
If the input and output is of different length

Encoder - LSTM
Decoder - LSTM

Advantage - Complex(anything) Seqential data(input can be any thing of any size)

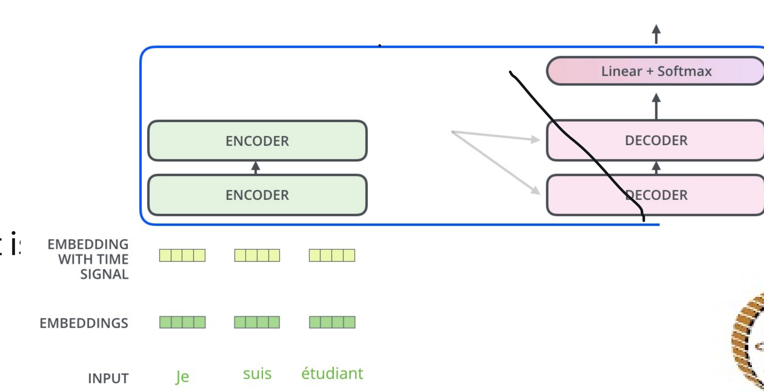
Disadvantage - Longer context is different, Computational complexity, one by one token input, the decoder will get the final hidden input from the encoder after getting all the data inputs, same word can have different meaning in different context

Application - Machine Translation, Text Su
Answering



TRANSFORMER

Advantage:
1. Encoder can take the whole token at once
2. It can understand long context
3. The same word with different meaning based on the context i



Disadvantage:
1. Computational cost, time, resource, data
2. No Interpretibilty
3. Heavy carbon footprint

Attention Mechanism - Transformer

2017 Google Brain

Importance of updating all the embedding of token based on the other tokens inside the sentence (Self Atten

Encoder -

Self Attention - Muti Head Attention - Encoder - Several Encoders

Word2vec embedding - apple - embedding - same

Keras embedding - apple - same - update based on the context - bidirectional - this may end up in understanding the context -

Encoders - multiple - 6 Encoders

Each Encoder - multiple Attention - 12 to many

Each Attention - update the Embedding