Types of RNN

There are 4 Types of RNN Architecture

1.) Many to One
2.) One to Many
3.) Many to Many
4.) One to One

Many to One:

Input mai Sequence Expect krta hai

In this architecture, multiple input time steps lead to a single output. It is often used for tasks where the entire input sequence is processed, and the final output is generated based on the entire context.

One to Many:

- This architecture involves a single input leading to multiple outputs. It is commonly used when a single piece of information needs to generate a sequence of outputs.

Many to Many:

It is Sequence to Sequence Model

- In Many to Many architecture, both input and output sequences have multiple time steps. This can be further classified into two subtypes:
  - **Synchronous Many to Many:** Input and output sequences have the same length, and each input time step corresponds to an output time step.
  - **Asynchronous Many to Many:** The lengths of the input and output sequences can differ, allowing for more flexibility in modeling.

One to One:

- Although not typically referred to as an RNN, the One to One architecture represents a standard feedforward neural network, where there is a single input and a single output without considering temporal dependencies. This can be seen as a basic neural network without recurrence.

Variable Length

Application: Machine Translation

Variable length sequences pose a challenge in many sequence-to-sequence tasks, especially in natural language processing or time series analysis. Handling variable length sequences is essential in scenarios where the length of input or output sequences can vary across different examples in a dataset.

Isko Even Ese architectures ko

Encoders & Decoders bhi bulate hai

Technically 3 Types hite hote hai

Many 2 Many

One 2 Many

Many 2 Many

Many to Many mai 2 types hote hai: 1.) Same Length 2.) Variable Length