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RNN Sentiment Analysis and Types of RNN

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[RNN sentiment analysis](https://colab.research.google.com/drive/1vOp5h0vfG_h8bRXSV1Tzf-jJQeQKKvdX)

# RNN Sentiment Analysis

For Sentiment Analysis , we have to convert textual data to vectors . We have two methods to do so: “integer encoding” and “embeddings”.

## Integer Encoding

First you form a vocabulary, meaning counting of unique words and then converting them to vectors .

Once you convert them , they need to be of the same size so that we add padding (sparse).

| Text | o/p |
| --- | --- |
| Hi there | 1 |
| How are you | 0 |

They would be converted like,

[1 2 0]

[3 4 5]

## Embeddings

Used for representation of words such that words are closer in vector space are expected to be similar in meaning

* no zero paddings (no sparse representation i.e. the added extra zeroes to equalize them in size )
* it forms a dense vector e.g. [0.7 0.1 0.3].
* Semantic meaning (every vector has a context).
* We can add an embedding layer before a RNN model . This is done so that the input converts to a dense vector instead of sparse and gives better results.

# Types Of RNN

## Many to one

Input — Sequence — sentences , time series

Output — non sequence — int / num like scalars (1,0)

E.g - Sentiment Analysis , Rating prediction 

## One to many

Input — non sequence

Output — sequential

E.g. image captioning , music search by a word etc.



## Many to many

Input — Sequence

Output — sequence

It is of two types

* Same length — input sequence == output sequence

E.g. parts of speech tagging , Name Entity Recognition



* Variable length – input sequence /= output sequence

E.g. Google translate



## One to One

Basically not a RNN , just an ANN , non-sequence to non-sequence.