Recurrent Neural Network

Brief Review

- ANN → Regression & Classification
- CNN → Image Recognition / Analysis
- **RNN → Time Series Analysis**
- Boltzmann Machines → Recommendation System
- Auto Encoders → Recommendation Systems

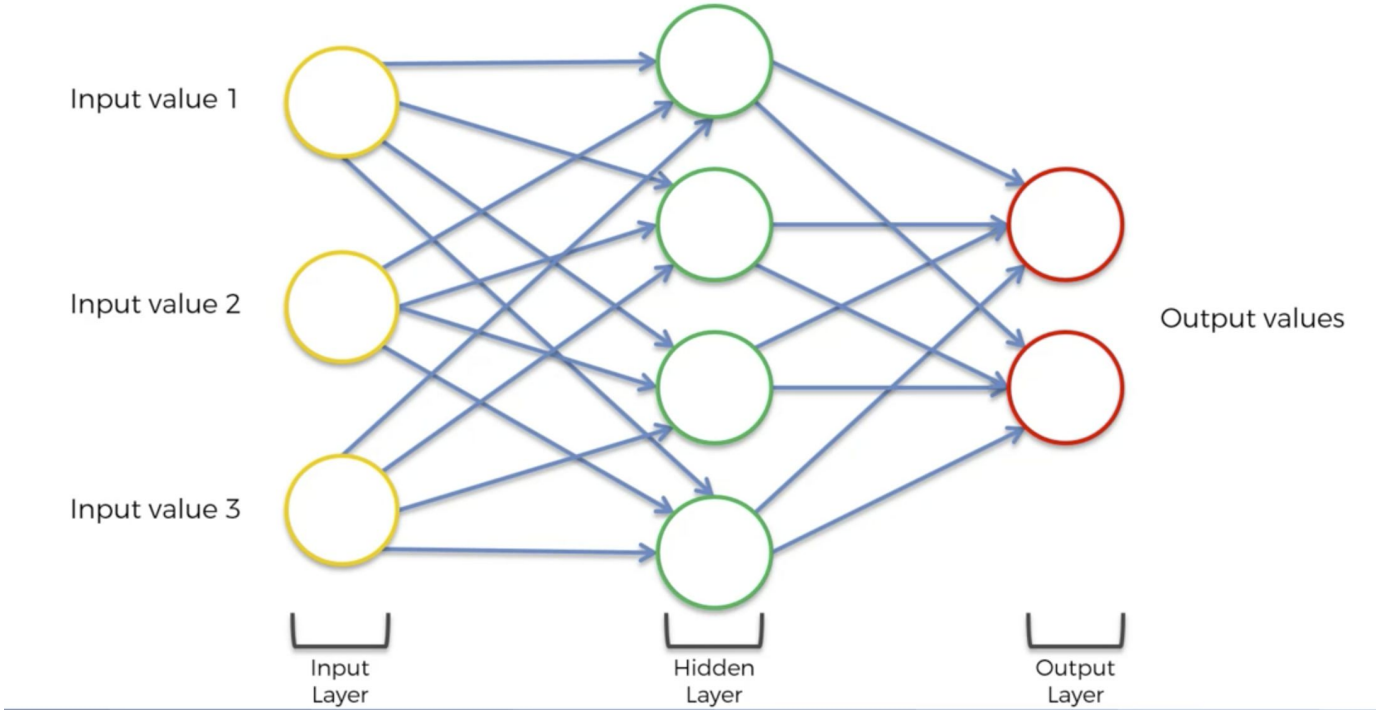
What is RNN

- A recurrent neural network (RNN) is a class of artificial neural network where connections between nodes form a directed graph along a sequence.
- This allows it to exhibit temporal dynamic behavior for a time sequence.
- Unlike feedforward neural networks, RNNs can use their internal state (memory) to process sequences of inputs.
- This makes them applicable to tasks such as unsegmented, connected handwriting recognition or speech recognition or any problem that involves requiring context for predicting future things.

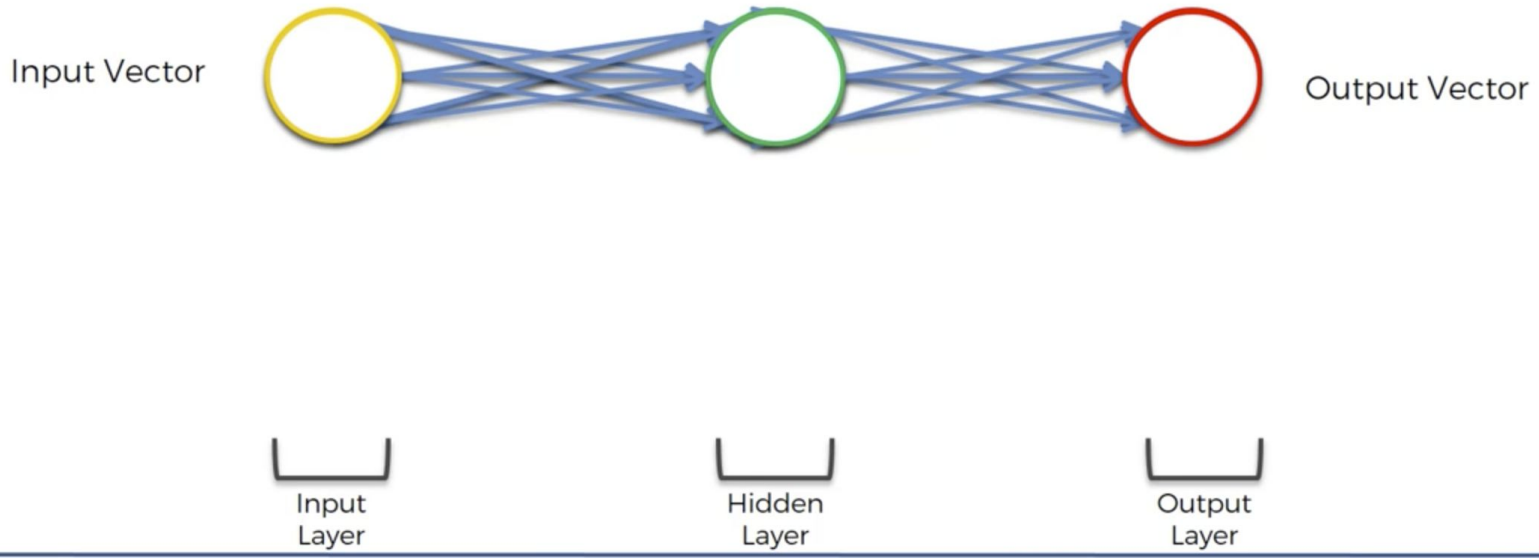
Start With Perceptron

A Perceptron consists of…..

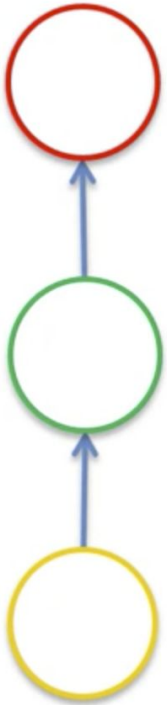
A Look at ANN Differently



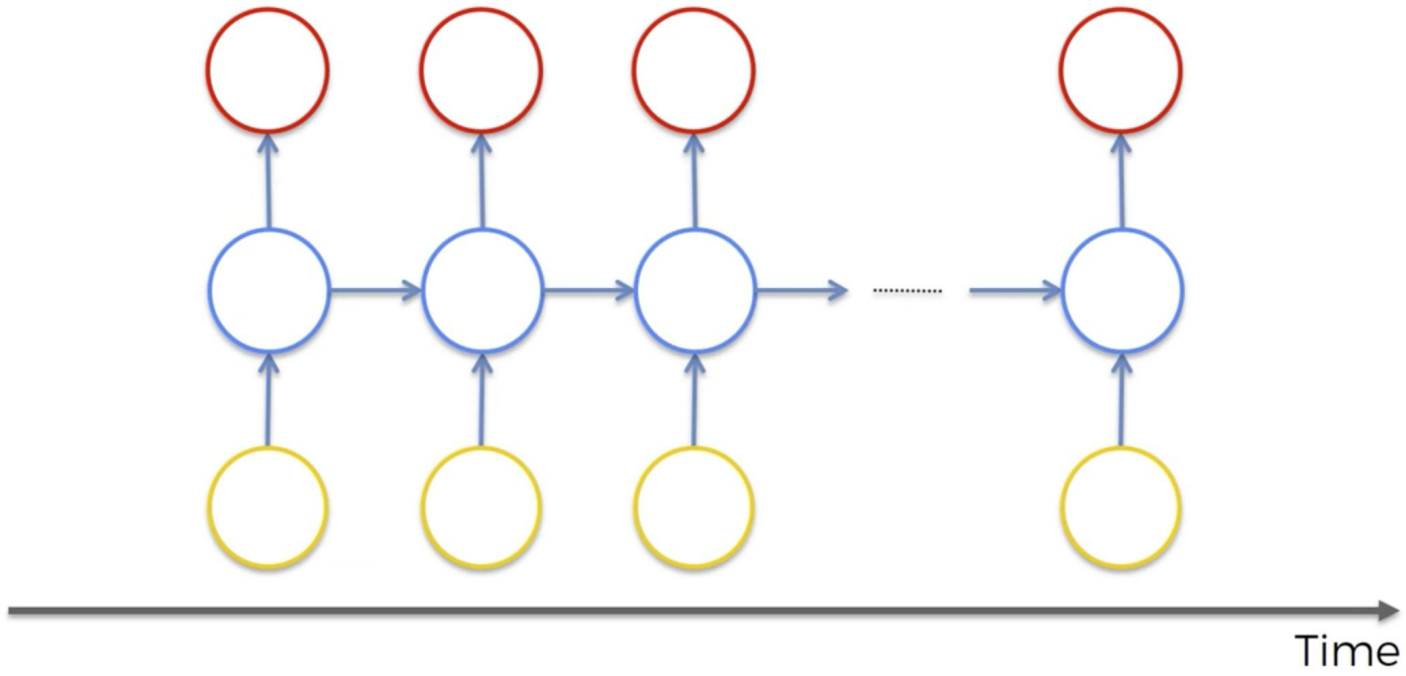
A Look at ANN Differently



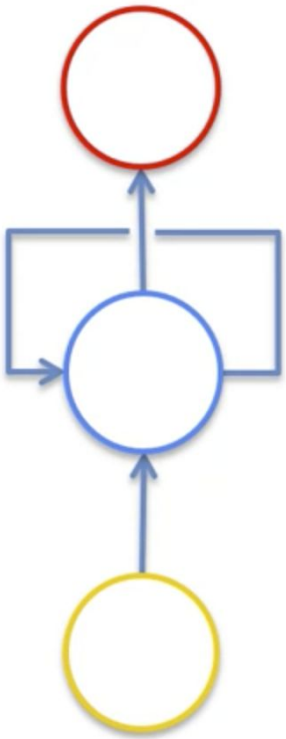
A Look at ANN Differently



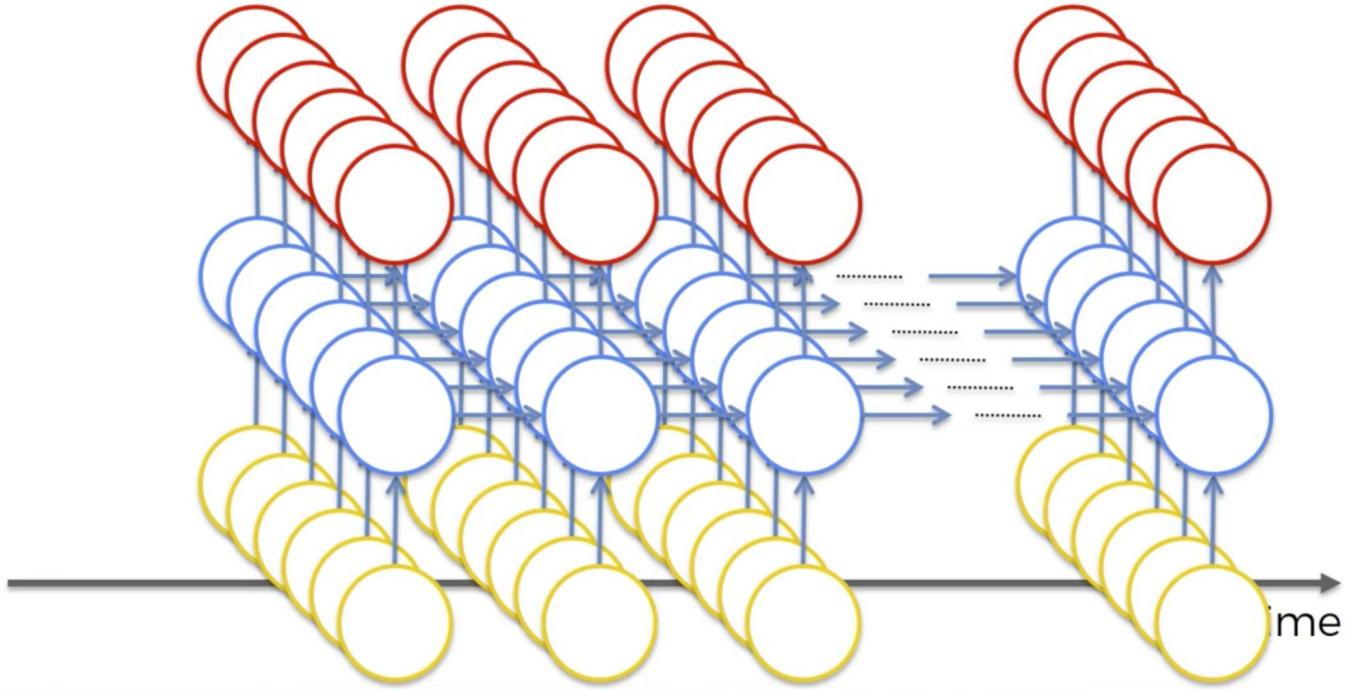
RNN….



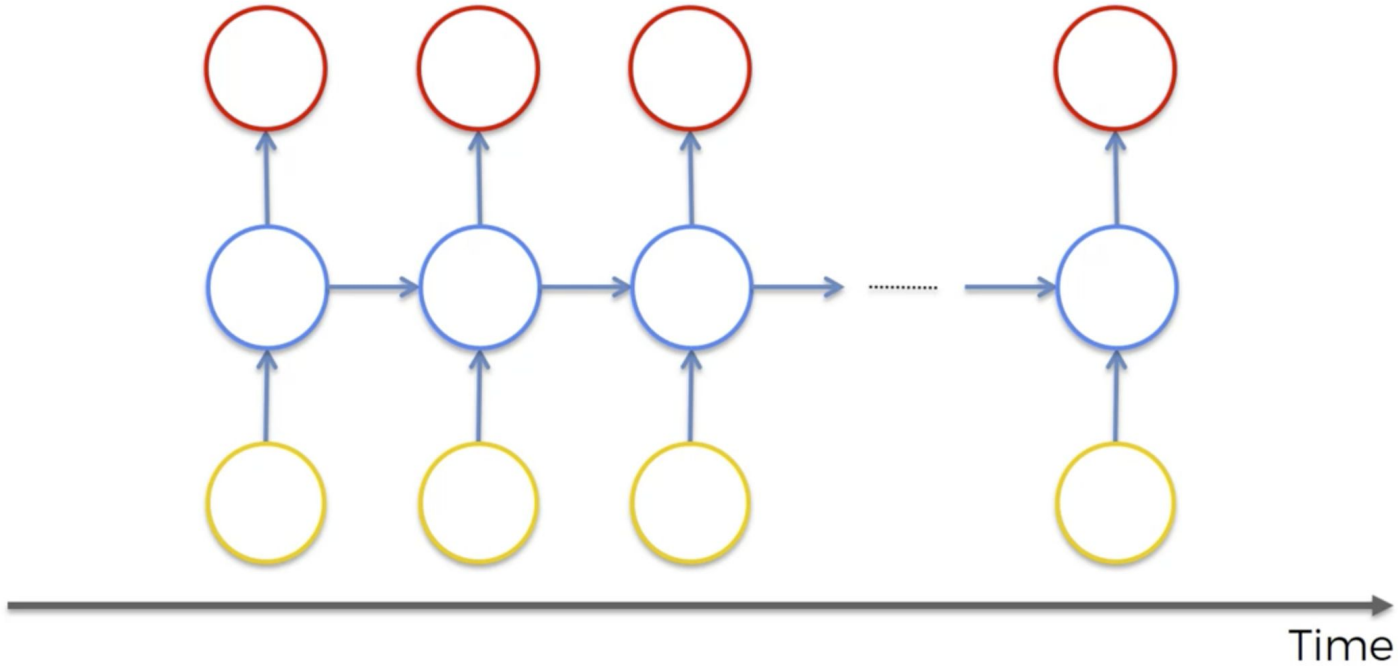
RNN



RNN….



This is an RNN



Some Good Articles

- RNN
  a. Andrej Karpathy, 2015, ***The Unreasonable Effectiveness of Recurrent Neural Networks***
  b. Andrej Karpathy, 2015, ***Visualizing and Understanding Recurrent Networks***
- LSTMs:
  a. Shi Yan, 2016, ***Understanding LSTM and its diagrams***

AI Movie

1. https://www.youtube.com/watch?v=LY7x2Ihqjmc
2. Oscar Sharp & Benjamin, 2016, ***Sunspring***

https://www.youtube.com/watch?v=5qPgG98_CQ8 Sequel

https://vimeo.com/259174870 : AI makes robot, more human than human?

Types of RNN

"black and white dog jumps over bar."

karpathy.github.io