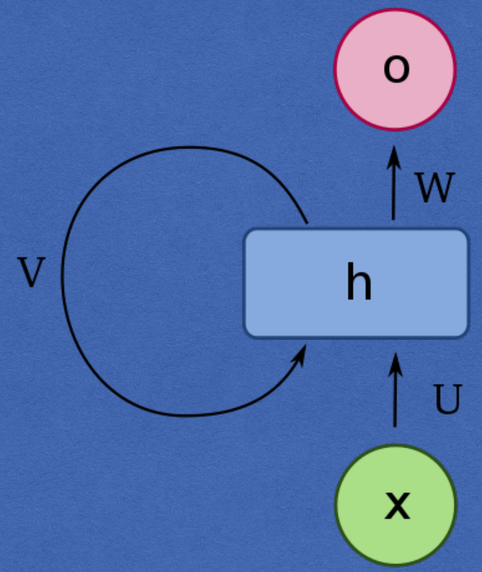
RNN
RECURRENT NEURAL NETWORK

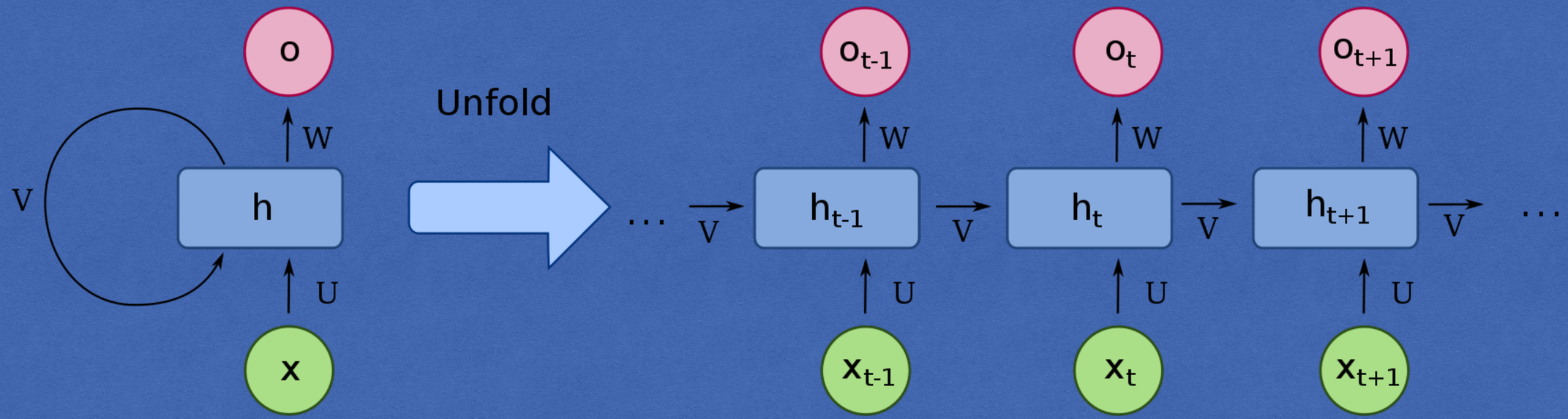
RNNs

RNNs are a class of neural networks that allow previous outputs to be used as inputs while having hidden states.



RNNs

RNNs are a class of neural networks that allow previous outputs to be used as inputs while having hidden states.



RNN Applications

The core reason that RNNs are so exciting is that they allow us to operate over sequences of vectors.

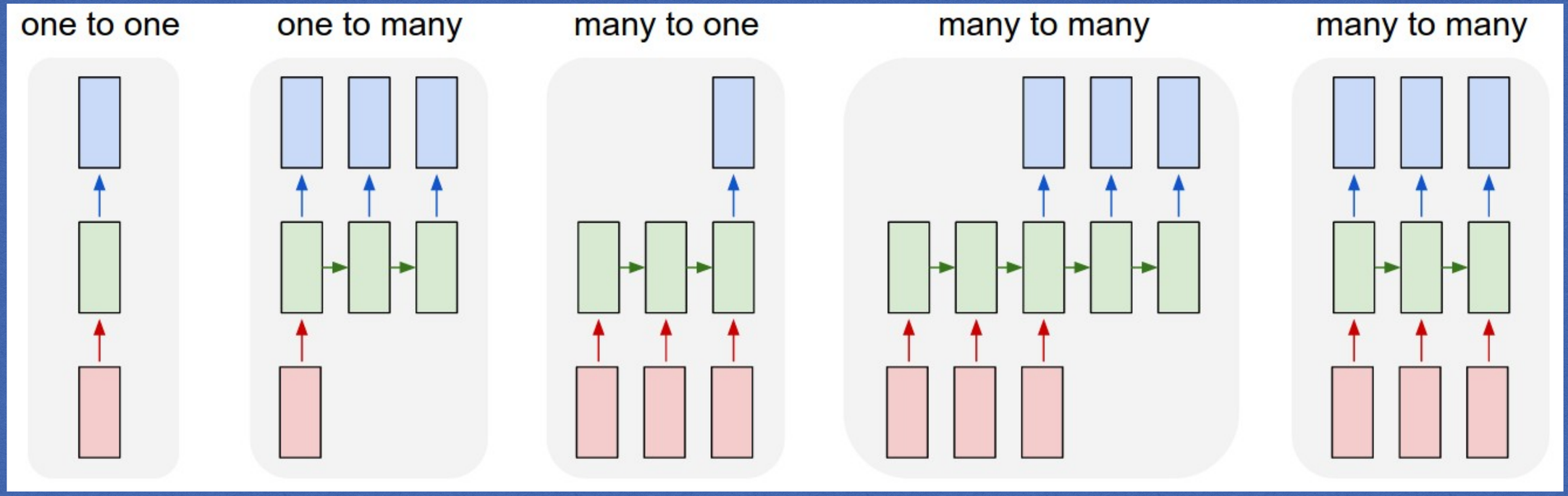


Image classification

Image captioning

Sentiment classification

Machine Translation

Video classification

RNN - PROs and CONs

Advantages	Drawbacks
• Possibility of processing input of any length • Model size not increasing with size of input • Computation takes into account historical information • Weights are shared across time	• Computation being slow • Difficulty of accessing information from a long time ago • Cannot consider any future input for the current state

TRAINING DATA: ONE-HOT ENCODING

A one-hot vector is filled with 0s except for a 1 at index of the current letter

all characters: [“a”, “b”, “c”, “d”, “e”]

“a”	→	[1, 0, 0, 0, 0]
“b”	→	[0, 1, 0, 0, 0]
“c”	→	[0, 0, 1, 0, 0]
“d”	→	[0, 0, 0, 1, 0]
“e”	→	[0, 0, 0, 0, 1]

RNN - Name Classification - Module