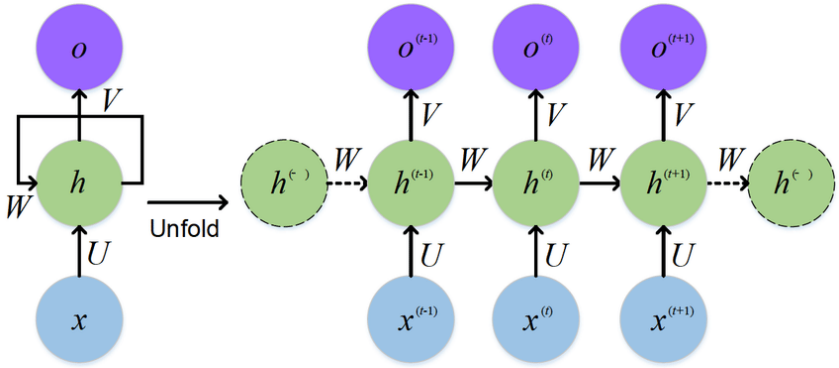
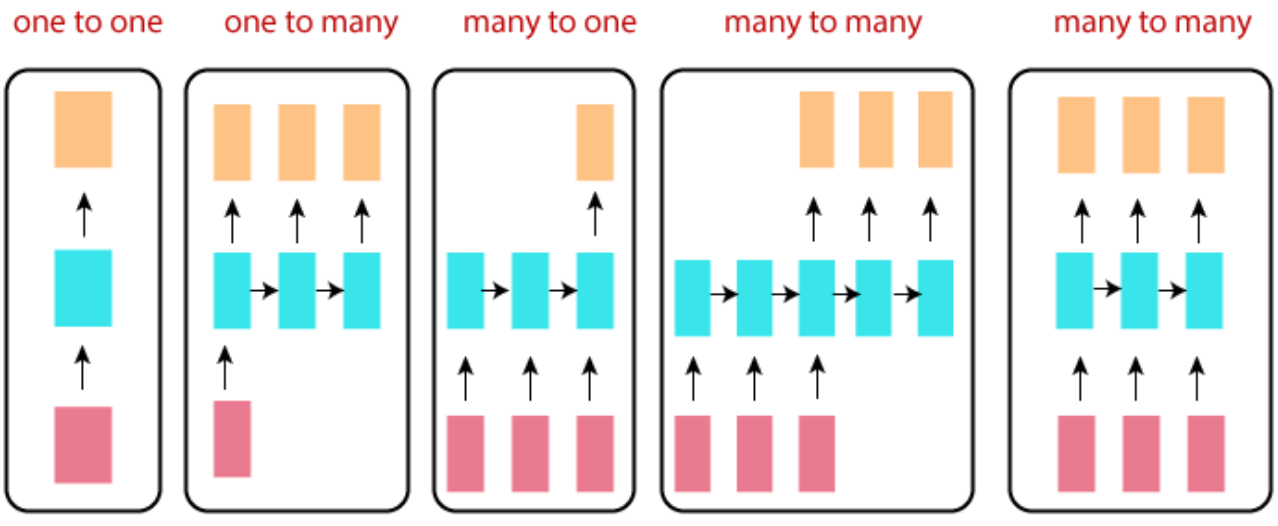
Recurrent Neural Networks

RNNs are a kind of Deep Learning structure that is usually used to predict the next step. (The most important property is that it can remembers)

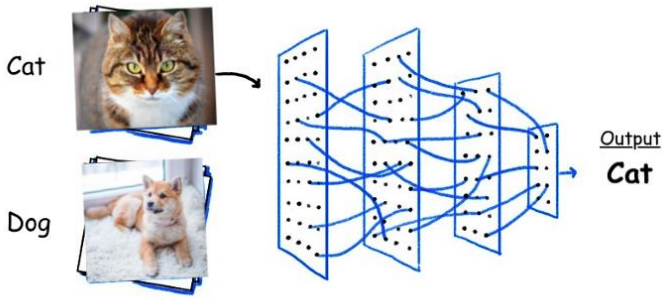
When performing training on the network, RNNs progress by storing information about the previous data in their memory.

- ⇨ Language Generation
- ⇨ Time series problems
- ⇨ Machine translation
- ⇨ Image captioning
- ⇨ Text analyzing





One to one: Called Plain Neural Networks. They are independent of the previous informations and outputs. For example; Image Classification

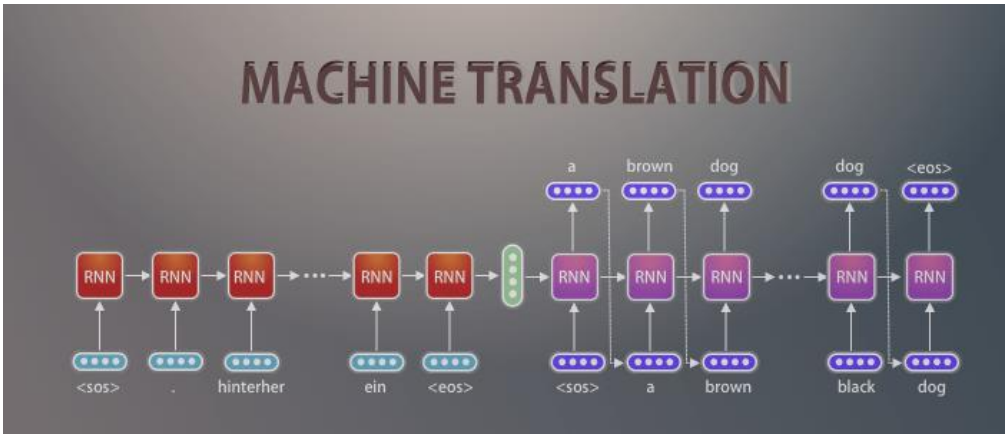


One to many: It takes a certain vector as input and serves an sequence as output. For example; Image Captioning takes the image as input and outputs a sentence of words.

Many to one: It takes sequence, serve an fixed size output. For example; Sentiment Analysis from text.

Loves the German bakeries in Sydney. Together with my imported honey it feels like home	Positive
@VivaLaLauren Mine is broken too! I miss my sidekick	Negative
Finished fixing my twitter...I had to unfollow and follow everyone again	Negative
@DinahLady I too, liked the movie! I want to buy the DVD when it comes out	Positive
@frugaldougal So sad to hear about @OscarTheCat	Negative
@Mofette briliant! May the fourth be with you #starwarsday #starwars	Positive
Good morning thespians a bright and sunny day in UK, Spring at last	Positive
@DowneyisDOWNEY Me neither! My laptop's new, has dvd burning/ripping software but I just can't copy the files somehow!	Negative

Many to many: It takes sequence data, serve sequence of data as output. For example; Machine Translation.



Many to many (Bidirectional): Synced sequence input and output. Notice that in every case are no pre-specified constraints on the lengths sequences because the recurrent transformation (green) is fixed and can be applied as many times as we like. For example; Video classification where we wish to label every frame of the video.