

# Dealing with Sequences: Recurrent Neural Network (RNN) layer

For a function that takes sequence  $\mathbf{x}^{(i)}$  as input and creates sequence  $\mathbf{y}$  as output we had two choices for implementing the function.

The RNN implements the function as a "loop"

- A function that taking a **single**  $\mathbf{x}_{(t)}$  as input a time
- Outputting  $\mathbf{y}_{(t)}$
- Using a "latent state"  $\mathbf{h}_{(t)}$  to summarize the prefix  $\mathbf{x}_{(1 \dots t)}$
- Repeat in a loop over  $t$

































































































































































