CSE 576 Quiz 9
Name:
ID:

1. Give the equations and figure for a simple RNN (Recurrent Neural Network)

$$\begin{aligned} \mathrm{RNN}(\mathbf{s}_0, \mathbf{x}_{1:n}) &= \mathbf{s}_{1:n}, \mathbf{y}_{1:n} \\ \mathbf{s}_i &= R(\mathbf{s}_{i-1}, \mathbf{x}_i) \\ \mathbf{y}_i &= O(\mathbf{s}_i) \end{aligned} \tag{36}$$

$$\mathbf{x}_i \in \mathbb{R}^{d_{in}}, \ \mathbf{y}_i \in \mathbb{R}^{d_{out}}, \ \mathbf{s}_i \in \mathbb{R}^{f(d_{out})}$$

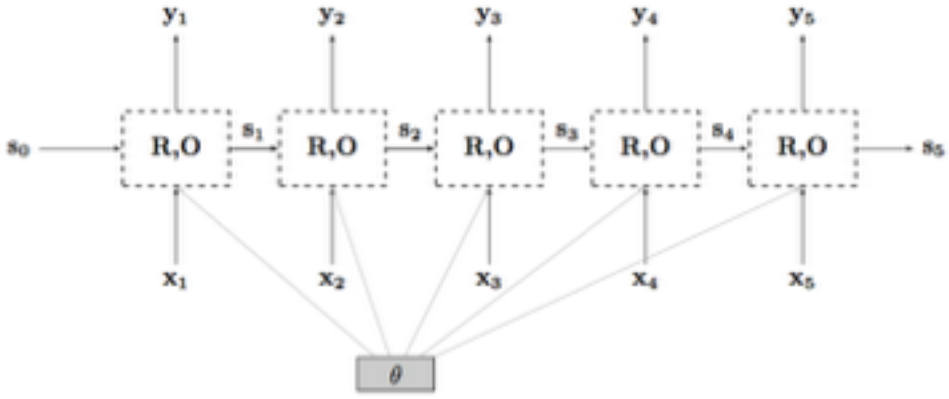

Figure 6: Graphical representation of an RNN (unrolled).

2. Give an example of where an "Acceptor" RNN is useful in Natural Language Processing. === Text classification

3. Give an example of where an "Encoder" RNN is useful in Natural Language Processing. === Sentence embedding

4. Give an example of where an "Transducer" RNN is useful in Natural Language Processing. === Language modeling/POS tagging/NER

5. Give an example of where an "Encoder-Decoder" RNN is useful in Natural Language Processing. === Machine Translation