Sequence Models

Jordan Boyd-Graber

University of Maryland

RNN by Hand

Slides adapted from Tom Yeh

Plan for Today

Recurrent Neural Network (RNN)

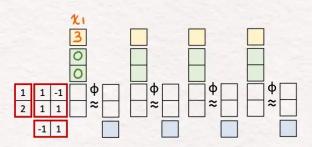
Input Sequence
$$X = \begin{bmatrix} 3 & 4 & 5 & 6 \end{bmatrix}$$

Parameters $A = \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$

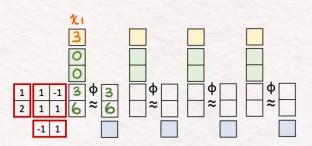
Activation Function Φ : ReLU

Hidden States $H_0 = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$

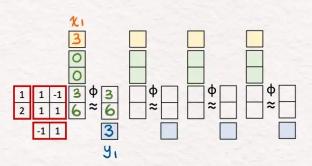
Output Sequence $Y = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$



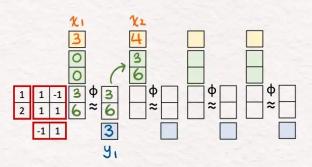
© 2023 Tom Yeh



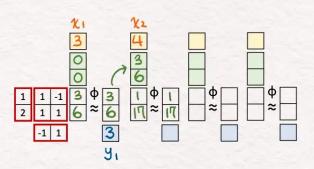
© 2023 Tom Yeh



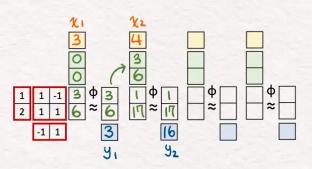
© 2023 Tom Yeh



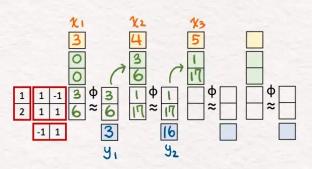
© 2023 Tom Yeh



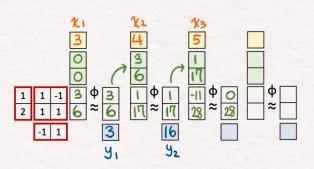
© 2023 Tom Yeh



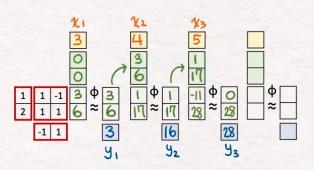
© 2023 Tom Yeh



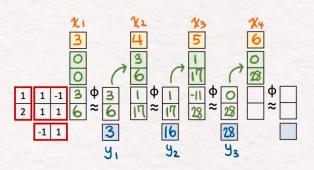
© 2023 Tom Yeh



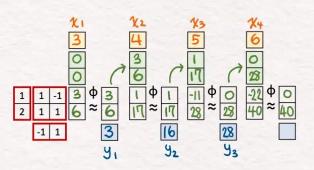
© 2023 Tom Yeh



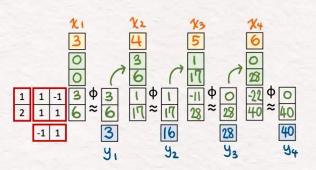
© 2023 Tom Yeh



© 2023 Tom Yeh



© 2023 Tom Yeh



© 2023 Tom Yeh

