



deeplearning.ai

# Recurrent Neural Networks

---

## Notation

# Motivating example

NLP

x: Harry Potter and Hermione Granger invented a new spell.

$\rightarrow x^{(1)} \quad x^{(2)} \quad x^{(3)} \quad \dots \quad x^{(t)} \quad \dots \quad x^{(9)}$

$T_x = 9$

$\rightarrow y:$

$y^{(1)} \quad y^{(2)} \quad y^{(3)} \quad \dots \quad y^{(9)}$

$T_y = 9$

$x^{(i)(t)}$

$T_x^{(i)} = 9$

15

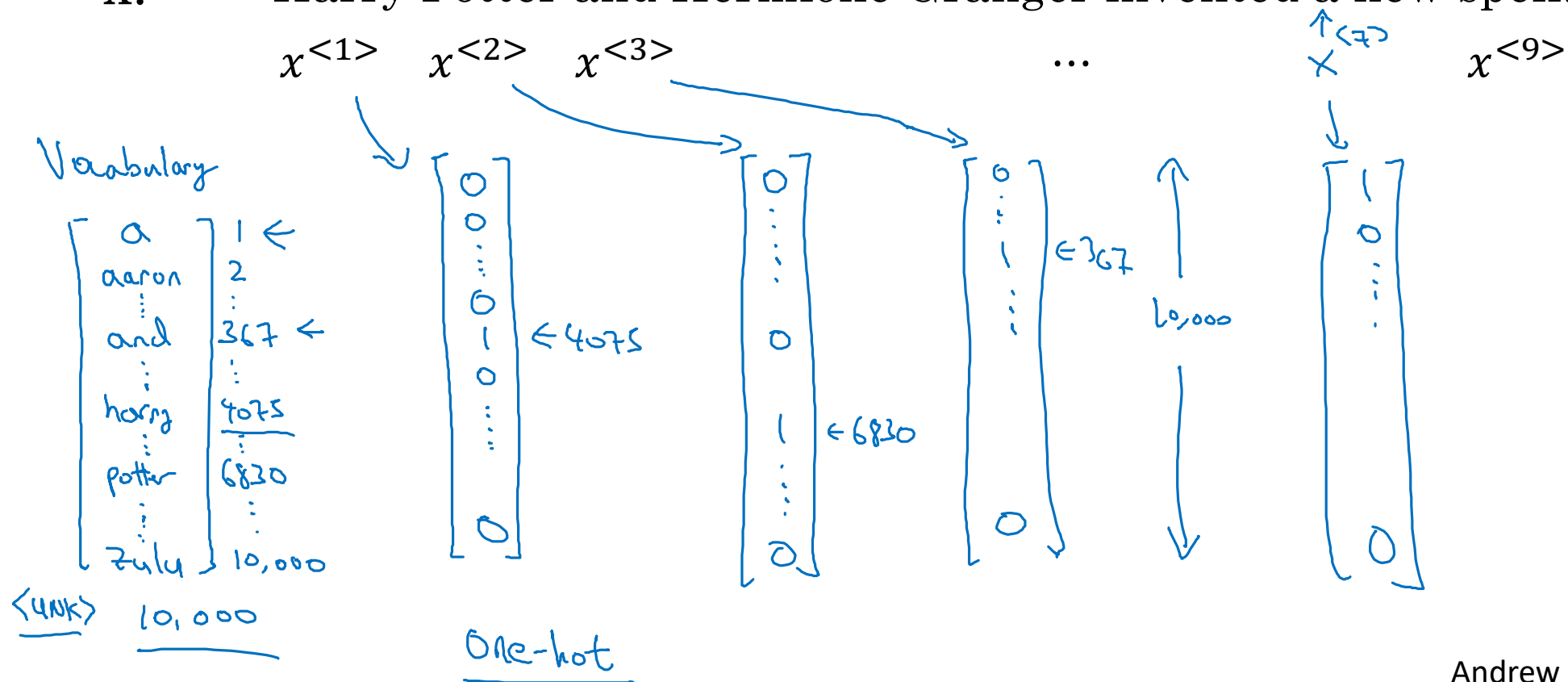
$y^{(i)(t)}$   
↑

$T_y^{(i)}$

# Representing words

$$x^{(t)} \rightarrow y \quad (x, y)$$

x: Harry Potter and Hermione Granger invented a new spell.



# Representing words

**x:** Harry Potter and Hermione Granger invented a new spell.

$x^{<1>}$     $x^{<2>}$     $x^{<3>}$     $\dots$     $x^{<9>}$

And = 367  
Invented = 4700  
A = 1  
New = 5976  
Spell = 8376  
Harry = 4075  
Potter = 6830  
Hermione = 4200  
Gran... = 4000

Andrew Ng