

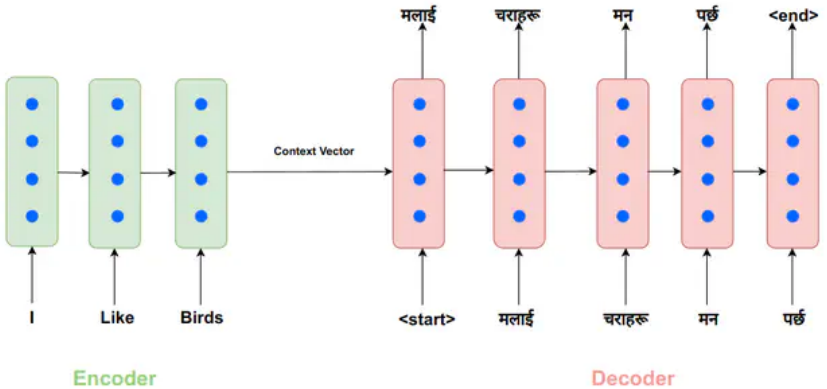
Machine Translation

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Neural Models

Adapted from material by Philipp Koehn, Mohit Iyyer, Luke Zettlemoyer, Kalpesh Krishna, Karthik Narasimhan, Greg Durrett, Chris Manning, Dan Jurafsky



From Aayush Neupane

Neural MT for the Win

- Fringe in 2014: First seq2seq paper published
- 2016: Google Translate switches from SMT to NMT

Neural MT for the Win

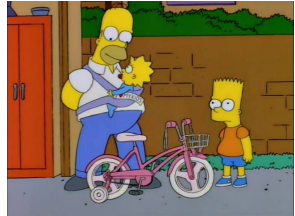
- Fringe in 2014: First seq2seq paper published
- 2016: Google Translate switches from SMT to NMT
- Why?
 - ▶ Representations allow generalization
 - ▶ Not tied to “words”
 - ▶ Attention allows long-range generalization

Distributed Representations

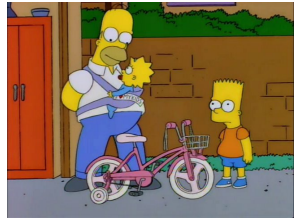
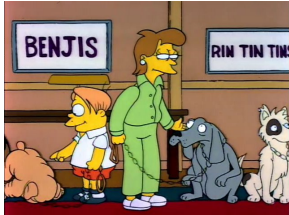
Distributed Representations



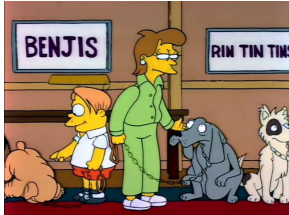
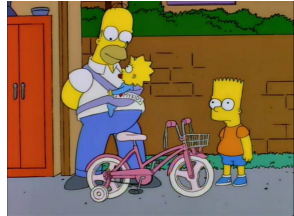
Distributed Representations



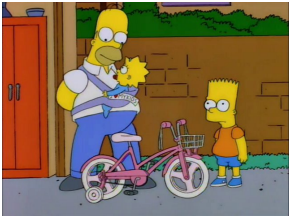
Distributed Representations



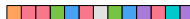
Distributed Representations



Distributed Representations



Weasel Trainer



Weasel Trainer



BIRDS AREN'T REAL



RESEARCH

THE NEWS WITH SHEPARD SMITH

"BIRDS AREN'T REAL" IS A PARODY CONSPIRACY THEORY "WITH A PURPOSE"



A large billboard with a white background and a black border. The text "Birds Aren't Real" is written in a bold, black, sans-serif font. Along the top edge of the billboard, a row of approximately 15 small, dark birds is perched. The billboard is supported by a dark metal frame. The background is a clear blue sky with a few white clouds. The billboard is set against a backdrop of a clear blue sky with a few white clouds. The billboard is supported by a dark metal frame. The background is a clear blue sky with a few white clouds.

Birds Aren't Real

LAMAR

054830

A billboard with a white background and black text. The text reads "Words Aren't Real". The billboard is mounted on a dark metal structure. The background is a clear blue sky with a few clouds, and the sun is setting behind the billboard, creating a warm glow. The billboard is supported by a dark metal frame. The sky is a mix of light blue and orange from the sunset. There are some birds perched on the top edge of the billboard. The overall scene is a mix of natural and man-made elements.

Words Aren't Real

LAMAR

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Word / Phrase Translation in Close Languages

Language	Sentence
English	How much does the weasel trainer charge?
Portuguese	Quanto cobra o treinador de doninhas?
Spanish	¿Cuánto cobra un entrenador de comadrejas?

What finer-grained outputs makes possible

- Capturing agreement markers (case, gender, number)
- Honorific / tense particles
- Topic markers
- Otherwise needs to be memorized (limits generalization)

Ist dir kalt?

Are you cold?

Ist dir kalt?

Are you cold?

Ist dir kalt?

Are you cold?

Ist dir ohne deine blaue Jacke kalt?

Are you cold without your blue jacket?

Ist dir kalt?

Are you cold?

Ist dir ohne deine blaue Jacke kalt?

Are you cold without your blue jacket?

Ist dir kalt?

Are you cold?

Ist dir ohne deine neue Jacke kalt?

Are you cold with your new jacket?



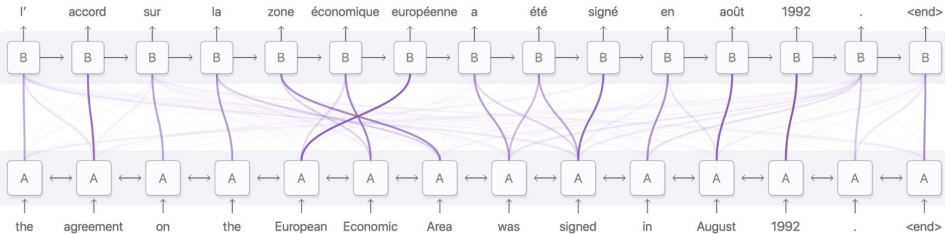
Ist dir ohne deine neue Kettensäge und Hockeymaske kalt?

Are you cold without your new chainsaw and hockey mask?

Ist dir ohne deine **neue** Kettensäge und Hockeymaske kalt?

Hand-drawn lines connecting the German and English sentences. A long curved line connects the start of the German sentence to the start of the English sentence. A shorter curved line connects the word 'neue' in the German sentence to the word 'new' in the English sentence. A straight line connects the end of the German sentence to the end of the English sentence.

Are you cold without your new chainsaw and hockey mask?



From Chris Olah <https://distill.pub/2016/augmented-rnns/>

