

Adapted from material by Thang Luong

Machine Translation

Computational Linguistics: Jordan Boyd-Graber University of Maryland

What makes neural models different?

- Sequence-to-sequence: train directly on sentence pairs
- No intermediate steps (e.g., alignment): generalizable
- Fluent!

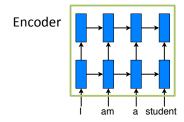
What makes neural models different?

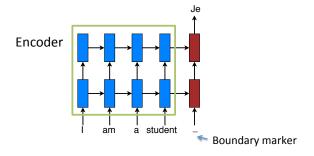
- Sequence-to-sequence: train directly on sentence pairs
- No intermediate steps (e.g., alignment): generalizable
- Fluent! (Looks better, hard to diagnose errors)

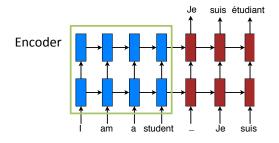
What makes neural models different?

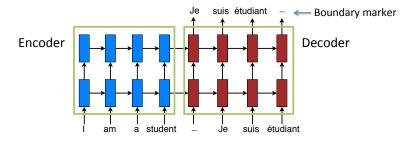
- Sequence-to-sequence: train directly on sentence pairs
- No intermediate steps (e.g., alignment): generalizable
- Fluent! (Looks better, hard to diagnose errors)
- More popular, seems to work better (with enough data)

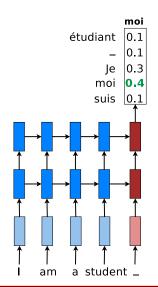
am a student Je suis étudiant

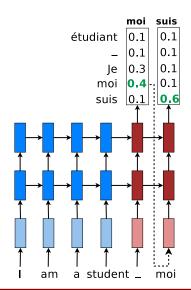


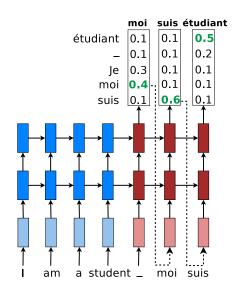


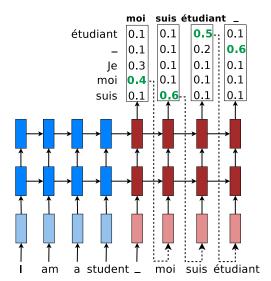


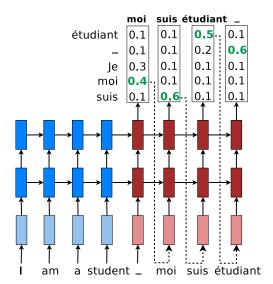












- Out of vocabulary words
- Complicated morphology
- Long sentences

- Out of vocabulary words: copying/transliteration
- Complicated morphology
- Long sentences

- Out of vocabulary words: copying/transliteration
- Complicated morphology: character-level models
- Long sentences

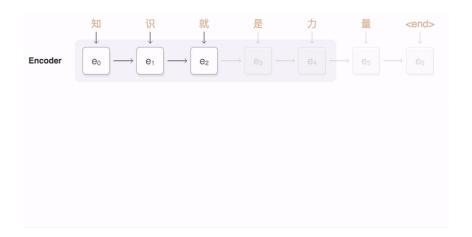
- Out of vocabulary words: copying/transliteration
- Complicated morphology: character-level models
- Long sentences: attention

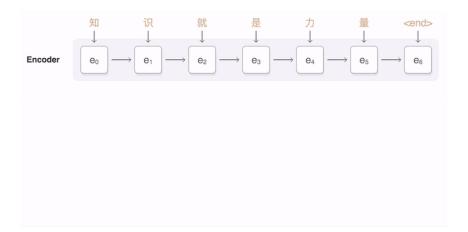


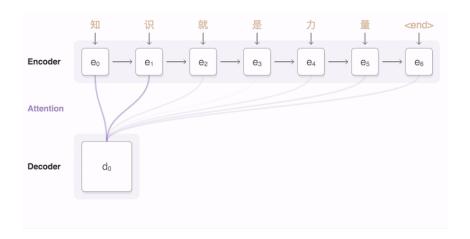


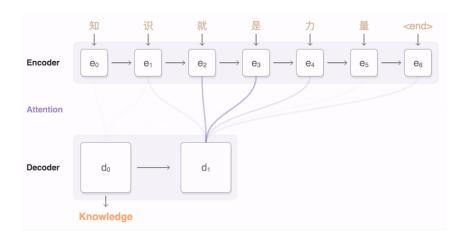


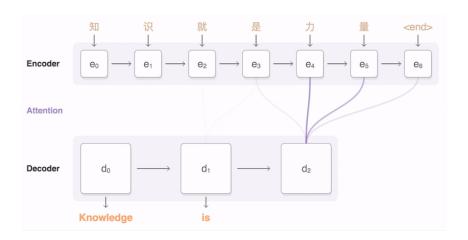


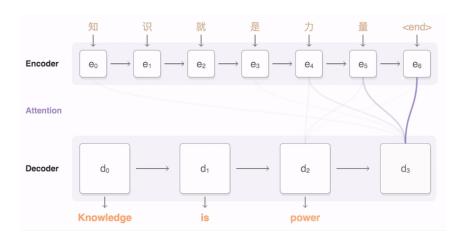


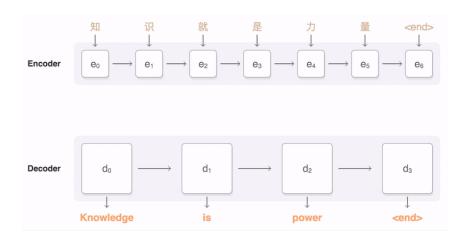












Beyond simple models

- Active area of research
- Implementations in all frameworks
- Reinforcement learning is huge component
- Low data