

Task and Motivation

Sentence: Are these plates of _____ importance or can I put them into storage?

Target Word: *vital*

Valid Distractors: *main, urgent, lively*

Invalid Distractors: *great, utmost*

- ❑ Task: given a **sentence** and **target word**, generate challenging **distractors**
- ❑ A **challenging distractor** is a word that is **semantically similar to the target** but does not make the sentence valid
- ❑ Distractors are typically created manually by language experts, which is time consuming and expensive

Approach

Translate to Spanish

Lance is **highly** knowledgeable on this subject

Align w/ source

(Lance, Lance)
(is, is)
(highly, **firmly**)
...

Translate back to English

Lance tiene gran conocimiento sobre este tema

Lance is **firmly** knowledgeable on this subject

- ❑ We use **round-trip neural machine translation** (NMT) to generate a diverse set of distractors
- ❑ **Intuition:** Lexical confusions, common among English learners, will manifest in round-trip NMT as back-translated words that are semantically close to the target
- ❑ We use **16 linguistically diverse language pivots to generate translations**

Contributions

- ❑ We show that high quality neural machine translation systems produce more challenging distractors
- ❑ We show that **typologically distant languages produce more diverse distractors**
- ❑ Our human study shows that **round-trip NMT generates distractors of the same difficulty as those produced by educational experts**

Findings

- ❑ The 16 language pivots are split into **four** groups based on their average BLEU scores. (Group 1 = High BLEU, Group 4 = Low BLEU)
- ❑ **Langs. with poorest MT systems produce the highest percentage of valid candidates**
- ❑ **Better Quality MT Systems generate more challenging distractors**

Pivot group	Valid candidates (%)	Cands. w/ sem. Sim. to target
1	70.8	125 (55.1%)
2	72.4	47 (38.2%)
3	75.5	39 (28.9%)
4	83.1	50 (36.8%)