

Assignment 3

CS583- Deep Learning

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Question 1 : Adversarial Machine Translation

Sr. no	Input Language	Input Sentences	Output language	Output sentences	Correct translation
1	English	You slayed it	Hindi	<i>aapane ise maar daala</i>	Kamaal kar diya
2	Hindi	<i>farsh par khana sakht mana hai</i>	English	Food on the floor is strictly prohibited	Eating on the floor is strictly prohibited
3	English	I am shook	Hindi	main hila hua hoon	Main pareshan hu
4	English	why are you so salty	Hindi	tum itane namakeen kyon ho	Tum gusse mein kyu ho
5	English	Ill tempered	Hindi	beemaar svabhaav ka	Krodhi/gussevar
6	English	hang in there	Hindi	vahaan par lataka hua	haar mat maano/ bharosa rakho
7	English	It's not rocket science	Hindi	yah koee roket saeens nahin hai	Yah mushkil nahi
8	English	Curiosity killed the cat	Hindi	jigyaasa nen billee ko maar daala	anaavashyak jaanch karna
9	English	He's not playing with a full deck	Hindi	vah ek poorn dek ke saath nahin khel raha hai	Vah naasamaj hai
10	English	He's dumb	Hindi	vah goonga hai	Vah naasamaj hai

Analysis :

1. "You slayed" it is a slang in English. Its correct translation is given by Google translation, which literally translates the sentence instead of understanding the slang behind it.
2. The output here is incorrect since "khana" is verb as well as noun in Hindi. In this context, the verb form ie "Eating" is correct instead of noun "Food"
3. Third incorrect output is due to multiple meanings of the word shook. Shook, colloquially means to be disturbed by something, which should have been the correct context for translation. But since shook is also the past tense of shake, the translator took this meaning and made the output completely wrong
4. In the next sentence, the output is incorrect due to literal translation of salty. In Hindi, salty is "namakeen" which is correct translation but used in culinary contexts. Here in input sentence, salty refers to temper (salty here means bad temper), which is far from the output context. Also the output sentence does not make sense because in Hindi, "namakeen" is only used in food-like context.
5. In this sentence, the translation of words "ill" and "tempered" is correct if taken into account independently. Though when taken into account together, it means someone with bad temper, which the translator fails to interpret.
6. Sentence six, seven, eight and nine are English phrases. The translator presents the literal output instead of meaning of the phrase.
7. Although sentence ten is correct, in most context it is not. This is because colloquial adaptation of the word 'dumb' rarely translates to someone who is mute. In most cases it means that the person in picture is stupid or silly.

Ideas for improvement:

As from this analysis, we can infer that most of the incorrect translations occur due to literal translation of words, rather than considering the entire context. In case of incorrect translation of common phrases (like in example 6, 7, 8,9 and 4), it can be improved by training the translator with commonly used idioms and their meanings.

In cases like example 3, since the word shook has multiple meanings and since no previous context was provided by which we can infer that which meaning of word 'shook' could be correct, one possible solution is to present multiple outputs with multiple meanings and make user aware that the output could be one of the sentences.

Example 1, 3 and 10 are examples of slangs. Slangs evolve very rapidly with each generation but it is not difficult to keep track of the meaning of slangs. There are various websites which give meaning of the slang words and then a model can be trained on that to get correct output.

Question 2:

4. The model as described in the question will not perform well on long sequences. This is because after the encoder compresses the long sequence of inputs into the fixed length vector let say X . This X will have to convey much more information. This makes the vector harder to interpret for the decoder layer, and the decoder will less likely give a correct result.