

Week 2: Quiz

Started: Nov 6 at 7:55pm

Quiz Instructions

Introduction and Noisy Channel Model

Question 1

1 pts

Given that we have a sequence of foreign words $f = f_1, f_2, f_3 \dots f_n$ and different i sequences of possible translated words $e^i = e^i_1, e^i_2, e^i_3 \dots e^i_n$ can we get the probability of the best e sequence being a translation of f according to the generative Noisy Channel Model?

- ☐ $p(e|f) = \arg \max_i p(e_i|f) =$
 $\arg \max_i \prod_{a \in A} p(e^i_1, e^i_2, \dots, e^i_n, a_1, a_2, \dots, a_n | f_1, f_2, \dots, f_n)$
- ☐ $p(e|f) = \arg \max_i p(e_i|f) =$
 $\arg \max_i \sum_{a \in A} p(e^i_1, e^i_2, \dots, e^i_n, a_1, a_2, \dots, a_n | f_1, f_2, \dots, f_n)$
- ☒ $p(e|f) = \arg \max_i p(f|e_i)p(e_i) =$
 $\arg \max_i \sum_{a \in A} p(f_1, f_2, \dots, f_n, a_1, a_2, \dots, a_n | e^i_1, e^i_2, \dots, e^i_n) \cdot p(e^i_1, e^i_2, \dots, e^i_n)$
- ☐ $p(e|f) = \arg \max_i p(f|e_i)p(e_i) =$
 $\arg \max_i \prod_{a \in A} p(f_1, f_2, \dots, f_n, a_1, a_2, \dots, a_n | e^i_1, e^i_2, \dots, e^i_n) \cdot p(e^i_1, e^i_2, \dots, e^i_n)$
- ☐ $p(e|f) = \arg \max_i p(e_i|f)p(f) =$
 $\arg \max_i \sum_{a \in A} p(e^i_1, e^i_2, \dots, e^i_n, a_1, a_2, \dots, a_n | f_1, f_2, \dots, f_n) \cdot p(f_1, f_2, \dots, f_n)$
- ☐ $p(e|f) = \arg \max_i p(e_i|f)p(f) =$
 $\arg \max_i \prod_{a \in A} p(e^i_1, e^i_2, \dots, e^i_n, a_1, a_2, \dots, a_n | f_1, f_2, \dots, f_n) \cdot p(f_1, f_2, \dots, f_n)$

Question 2

1 pts

Put the correspondent number of the IBM model that solves:

- 2 Absolute Alignment Position(distortion) Model
- 4 Relative Alignment Model
- 3 Fertility Model
- 5 Fixes Deficiency of other Models

1

Lexical Translation

IBM Model 1

Question 3

1 pts

If we consider Spanish as foreign language and English as end language, and given the following extracts of Model 1 table:

learning		machine		translation		is		cool	
f	t(f e)	f	t(f e)	f	t(f e)	f	t(f e)	f	t(f e)
aprendizaje	0.54	máquina	0.27	traducción	0.77	es	0.33	fría	0.18
enseñanza	0.07	automática	0.13	traducir	0.03	se	0.16	enfriar	0.09
aprender	0.04	maquinaria	0.11	traducciones	0.03	tiene	0.09	fresca	0.03
formación	0.04	automáticas	0.05	versión	0.01	está	0.08	bien	0.03
educación	0.03	aparato	0.04	traducido	0.01	hay	0.02	calma	0.03

What is the $p(\text{learning machine translation is cool} \mid \text{aprender automática traducción está bien})$ provided that $p(\text{learning machine translation is cool})=0.60$? Give the result at \log_{10} representation rounded to two digits.

That is, if the probability was 0.0365 then you should compute $\log_{10}(0.0365) = -1.437707136$ and round the result to -1.44.

-6.1001

IBM Model 2 and HMM

Question 4

1 pts

Please, mark for each one of the following statements whether are True or False:

False

HMM Model provides an alternative methodology to perform absolute alignment position modeling and it is based on conditionally independent decisions

True

IBM Model 2 provides an alternative methodology to perform absolute alignment position modeling and it is based on conditionally independent decisions

True

IBM Model 2 can be substituted by HMM model as they intend to capture the same effect

False

HMM Model provides an alternative model based on relative alignment modeling based on conditionally dependent decisions

False

Dynamic Programming means that the alignment decisions are conditionally independent

False

IBM Model 2 involves Dynamic Programming; therefore it implies more complex inference

True

HMM involves Dynamic Programming; therefore it implies more complex inference

Symmetrization

Question 5

1 pts

Given the following alignment matrices e2f and f2e:

f2e		and	,	behold	,	there	appeared	unto	them	Moses	and	Elias	talking	with	him	.		e2f
Και																		Και
ιδου																		ιδου
,																		,
εφανησαν																		εφανησαν
εις																		εις
αυτους																		αυτους
Μωυσης																		Μωυσης
και																		και
Ηλιας																		Ηλιας
συλλαλουντες																		συλλαλουντες
μετ																		μετ
,																		,
αυτου																		αυτου
.																		.

What would be the result of symmetrizing with AND heuristic?

☐

	and	,	behold	,	there	appeared	unto	them	Moses	and	Elias	talking	with	him	.	
Και																
ιδου																
,																
εφανησαν																
εις																
αυτους																
Μωυσης																
και																
Ηλιας																
συλλαλουντες																
μετ																
,																
αυτου																
.																

☐

and	,	behold	,	there	appeared	unto	them	Moses	and	Elias	talking	with	him	.	Και
															ιδου
															,
															εφανησαν
															εις
															αυτους
															Μωυσης
															και
															Ηλιας
															συλλαλουντες
															μετ
															,
															αυτου
															.

☐

	and	,	behold	,	there	appeared	unto	them	Moses	and	Elias	talking	with	him	.
Και															
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μετ															
,															
αυτου															
.															

☐

and	,	behold	,	there	appeared	unto	them	Moses	and	Elias	talking	with	him	.	
															Και
															ιδου
															,
															εφανησαν
															εις
															αυτους
															Μωυσης
															και
															Ηλιας
															συλλαλουντες
															μετ
															,
															αυτου
															.

Phrase Extraction (phrases invalid)

Question 6

1 pts

Considering the following symmetrization from previous question:

and	,	behold	,	there	appeared	unto	them	Moses	and	Elias	talking	with	him	.	
															Και
															ιδου
															,
															εφανησαν
															εις
															αυτους
															Μωυσης
															και
															Ηλιας
															συλλαλουντες
															μετ
															,
															αυτου
															.

Which of the following phrases are inconsistent?

- ☐ εφανησαν – there appeared
- ☐ εφανησαν – there
- ☐ εφανησαν εις – there appeared unto

☐ συλλαλουντες μετ – talking☐ Ηλιας συλλαλουντες μετ – talking☐ Και ιδου – and , behold☐ Και – and ,☐ Και ιδου –, behold

Quiz saved at 8:50pm

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