	$\alpha=0.2$		$\alpha=0.3$		$\alpha=0.4$		$\alpha=0.5$		$\alpha=0.6$		$\alpha=0.7$		$\alpha=0.8$	
	exp1	exp2	exp1	exp2	exp1	exp2	exp1	exp2	exp1	exp2	exp1	exp2	exp1	exp2
Top1	13.46	13.32	13.79	13.61	**11.04**	12.76	11.63	**10.93**	10.83	11.25	9.62	10.63	8.73	10.18
Top5	21.58	19.59	23.27	20.17	**19.69**	18.28	21.07	**17.25**	22.05	16.84	17.96	16.26	17.38	15.34
Top10	27.39	22.71	28.41	24.73	**26.52**	22.93	26.83	**21.81**	27.26	20.39	24.38	21.26	25.42	18.20
Top20	35.23	34.88	35.94	29.49	**37.81**	31.57	38.59	**33.04**	36.52	31.72	35.25	29.75	34.65	27.62
Top50	43.91	40.63	43.75	40.85	**46.22**	41.46	48.72	**42.79**	45.48	40.49	41.57	39.94	42.81	38.07
Top100	53.76	48.47	54.38	52.04	**59.28**	53.15	57.36	**53.46**	55.19	51.83	55.63	49.52	53.41	47.15

Table 4. Parameters Experiment

rank. Through the revision module, we get both higher recall and higher precision than statistical transliteration model when at most 5 results are returned.

We also use the average rank and average reciprocal rank (ARR) [Voorhees and Tice, 2000] to evaluate the improvement. ARR is calculated as

$$ARR = \frac{1}{M}\sum_{i=1}^{M}\frac{1}{R(i)} \quad (8)$$

where $R(i)$ is the rank of the answer of ith test word. M is the size of test set. The higher of ARR, the better the performance is.

The results are shown as Table 6.

	Statistical model		Revision module		Re-rank Module	
	close	open	close	open	close	open
Average rank	37.63	70.94	24.52	58.09	16.71	43.87
ARR	0.3815	0.1206	0.3783	0.1648	0.6519	0.4492

Table 6. ARR and AR evaluation

The ARR after revision phase is lower than the statistical model. Because the goal of revision module is to improve the recall as possible as we can, some noisy words will be introduced in. The noisy words will be pruned in re-ranking module. That is why we get the highest ARR value at last. So we can conclude that the revision module improves recall and re-ranking module improves precision, which help us get a better performance than pure statistical transliteration model

6 Conclusion

In this paper, we present a new approach which can revise the results generated from statistical transliteration model with the assistance of monolingual web resource. Through the revision process, the recall of transliteration results has been improved from 72.52% to 85.78% in the close test set and from 41.73% to 59.28% in open test set, respectively. We improve the precision in re-ranking phase, the top-5 precision can be improved to 76.35% in close test and 52.19% in open test. The promising results show that our approach works pretty well in the task of backward transliteration.

In the future, we will try to improve the similarity measurement in the revision phase. And we also wish to develop a new approach using the transliteration candidates to search for their right answer more directly and effectively.

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