Appendix

1 Ablation study

We report the ablation test of DEN (our model) in terms of discarding the cross-word mechanism (DEN w/o CW), computing the prediction error in word level instead of in embedding level (denoted as DEN w/ word-level), and employing forward LSTM network as the decoder instead of bidirectional LSTM (denoted as DEN w/ LSTM).

Methods	Classification	Retrieval task (MAP)			Retrieval task ($P@n$)		
	Accuracy	MAP@25	MAP@50	MAP@100	P@25	P@50	P@100
DEN	**0.757**	**0.671**	**0.632**	**0.593**	**0.585**	**0.554**	**0.517**
DEN w/o CW	0.753	0.628	0.582	0.537	0.529	0.491	0.446
DEN w/ word-level	0.754	0.661	0.616	0.571	0.563	0.524	0.474
DEN w/ LSTM	0.741	0.665	0.624	0.581	0.575	0.540	0.499
PV	0.707	0.602	0.567	0.534	0.523	0.501	0.475
ST	0.486	0.455	0.402	0.351	0.309	0.277	0.247
TF-IDF	0.647	0.593	0.555	0.518	0.499	0.472	0.438
LDA	0.307	0.253	0.218	0.183	0.139	0.126	0.113
LSA	0.362	0.369	0.328	0.287	0.244	0.220	0.195

Table A.1: Experiment results on both the document classification and retrieval tasks.