Appendix

D	C	Precision	Recall	F-measure
1	0.01	0.5951	0.1255	0.2072
	0.1	0.7676	0.5038	0.6082
	1	0.7917	0.7181	0.7531
	10	0.7356	0.6973	0.7159
	100	0.6717	0.663	0.6674
2	0.01	0.7775	0.4532	0.5724
	0.1	0.8178	0.6891	0.7478
	1	0.8139	0.6874	0.7451
	10	0.814	0.6873	0.7452
	100	0.8139	0.6873	0.7451
3	0.01	0.8219	0.6339	0.7155
	0.1	0.8208	0.6351	0.7158
	1	0.8207	0.6351	0.7159
	10	0.8208	0.6352	0.716
	100	0.8208	0.6351	0.7159
4	0.01	0.8273	0.578	0.6801
	0.1	0.8273	0.5779	0.6801
	1	0.8273	0.5779	0.6801
	10	0.8273	0.578	0.6801
	100	0.8273	0.578	0.6801

Table 1. Results of parameter optimization for SVM-based NER module with baseline features using the training set. Reported numbers are averages from 5-fold cross validation. Major SVM parameters to optimize include the degree of the polynomial kernel function (D) and the cost (C) used in the optimization step of learning. Although the highest F-measure was achieved at D=1 and C=1. We decided to use D=2 and C=0.1 in this study, because the model performance was more stable among different values of C when D was 2.

Feature Set	Pre	Rec	F-measure
Baseline (bag-of-word + previous_history)	0.8139	0.6874	0.7478
Baseline + POS	0.8079	0.7084	0.7549
Baseline + orthographic	0.8047	0.7069	0.7525
Baseline + prefix&suffix	0.7904	0.7138	0.7501
Baseline + (POS + Orthographic + prefix&suffix)			
Baseline + (POS + Orthographic + prefix&suffix) + MedLEE	0.8362	0.7928	0.8139
Baseline + (POS + Orthographic + prefix&suffix) + KnowledgeMap	0.8249	0.7718	0.7974
Baseline + (POS + Orthographic + prefix&suffix) + DST	0.8294	0.7846	0.8064
Baseline + (POS + Orthographic + prefix&suffix) + (MedLEE + KnowledgeMap + DST)	**0.8507**	**0.8153**	**0.8326**
Baseline + (POS + Orthographic + prefix&suffix) + (MedLEE + KnowledgeMap + DST) + source&section	0.8460	0.8024	0.8236

Table 2. Results of SVM-based NER module on the training set (using a 5-fold cross validation), when different sets of features were used. The "previous history" features, which are labels of preceding words, assigned by the NER system itself, was implemented in the TinySVM package. POS – part of speech; MedLEE, KnowledgeMap, and DST – three NLP systems used in this study.

Class Name	precision	recall
Absent	0.9623	0.9459
associated_with_someone_else	0.9623	0.7822
Conditional	0.7139	0.2697
Hypothetical	0.9390	0.8724
Possible	0.7608	0.5925
Present	0.9430	0.9766

Table 3. Results of Assertion Classifier by class, using i2b2/VA test data set.