

USING SEMANTIC ROLE LABELING TO PREDICT ANSWER TYPES

Zuyao Li, Peter Exner, Pierre Nugues
University of Southern California, Lund University



LUND UNIVERSITY

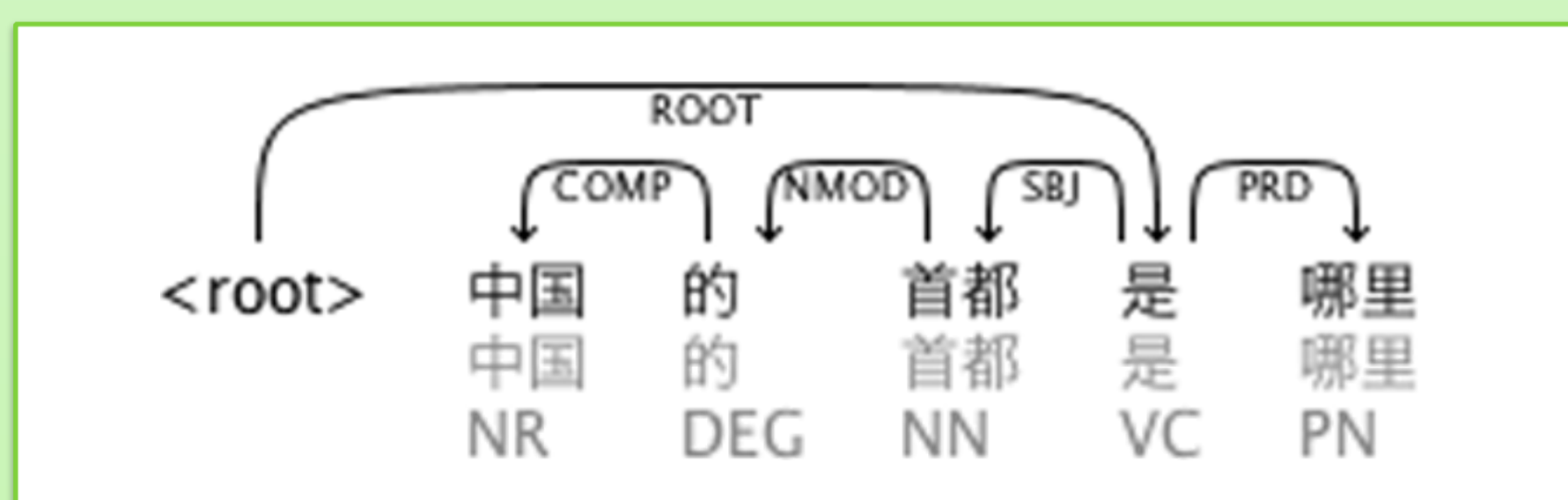
Overview

Most question answering systems feature a step to predict an expected answer type given a question. In this paper, we present a method for constructing a probability-based answer type model for each different question. We adapted and reproduced the original experiment of Pinchak and Lin on a Chinese corpus and we extended their model to semantic dependencies. Our model evaluates the probability that a candidate answer fits into the semantic context of a given question. We carried out an evaluation on a set of questions either drawn from NTCIR corpus or that we created manually.

Semantic Parsing

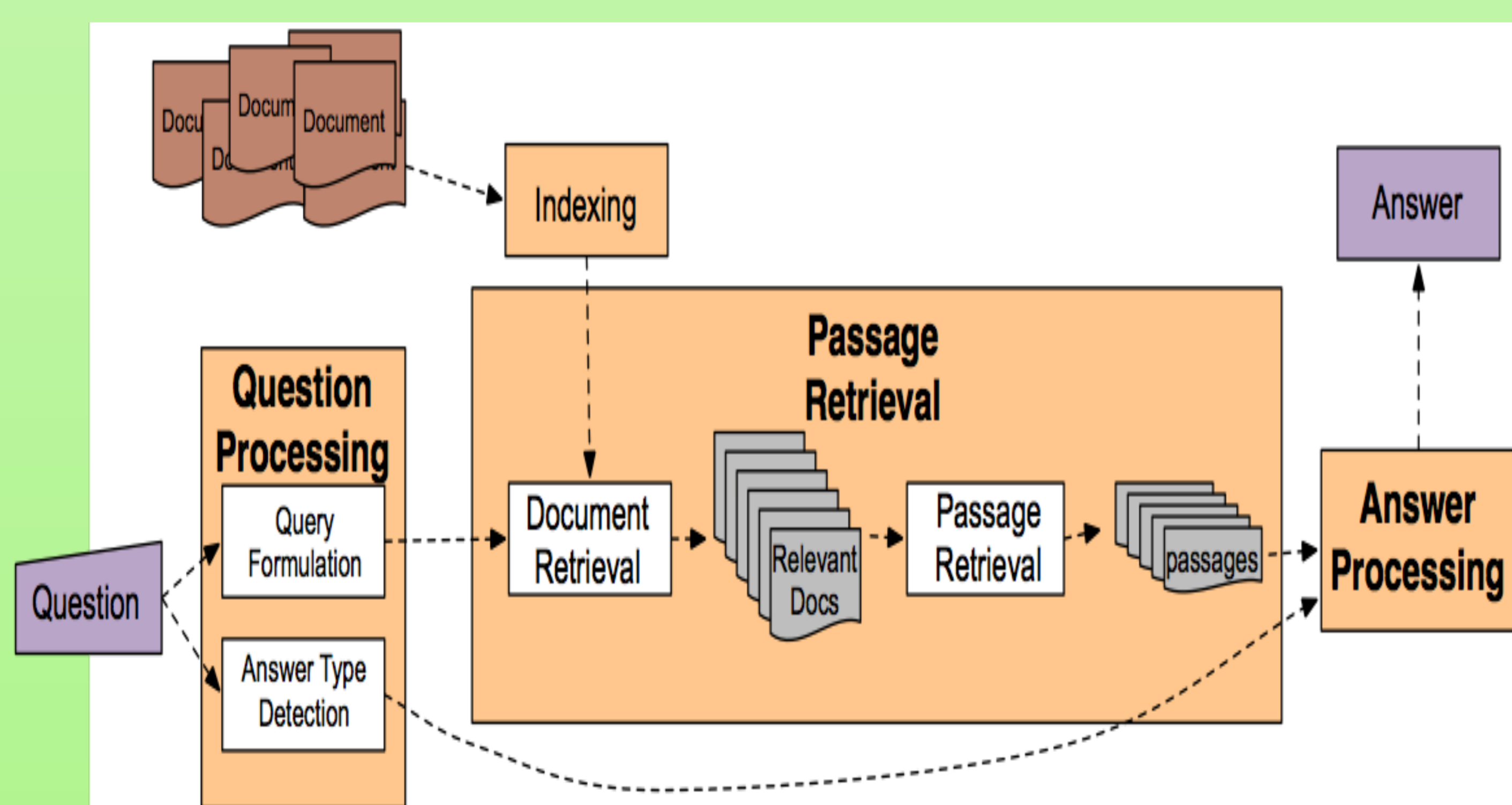
Here is an example of semantic parsing result of a Chinese sentence, “中国的首都是哪里” where is the capital of China?

	中国	的	首都	是	哪里	?
是.01	A0			A1		



Architecture

The architecture of our question answering system is composed of three parts: Question processing, answer processing and passage retrieval.



Results

Our probabilistic model uses candidate contexts extracted from corpus and question contexts from questions to calculate the appropriateness of a candidate answer. We showed that dynamic question typing is applicable to Chinese and that semantic role labeling can improve the performance of question typing over grammatical functions.

Data Set	Baseline	Dependencies	Semantic roles
NTCIR	56	135	79
Manual	23	9	6

Table above shows the median rank of the correct answer in the list of candidates for the question set.

We found that the semantic role method had a result worse than the baseline when we used the NTCIR test set, but it is better when we use the test set created manually. Examining the analysis results, we could find that the cause is the frequent incorrect identification of the predicate by the semantic role labeler for verbs like 在 'is in' as in the sentence: 中国的首都在北京. 'The capital of China is in Beijing.'

To our surprise, using semantic roles is better than the dependency tree method, which defines the contexts of a word to be the undirected paths in dependency trees. We believe, this is due to a better capacity of the semantic role labeler to provide abstract contexts.

Contact

zuyaoli2010@gmail.com

peter.exner@cs.lth.se

pierre.nugues@cs.lth.se