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Coarse-To-Fine Semantic Parsing with Transformers

Semantic Parsing is the task of translating a natural language sentence to a language that can be processed by a computer (e.g. first-order-logic, lambda calculus and Prolog). This translation allows one, for example, to query databases and command virtual assistants using natural language. An example of a semantic parsing dataset is the Geo880, which contains 880 sentences in English on US geography, and their corresponding translations in Prolog format.

Ex: what is the population of oregon ? answer (A , (population (B , A) , const (B , stateid (oregon))))

Currently, neural network based models called Transformers (the engines behind Google's Translate) give state-of-the-art results on all of the benchmark sematic parsing datasets.

In this poster presentation, we will propose our own Transformer-Based Semantic Parser (TBSP) which uses a two-layered approach, each layer being a Transformer.

Our method uses a rough sketch of the parse (a 'coarse' parse) at the first layer, where the rough sketch contains an ordered list of all the logical operators, predicates, relations and constants present in the semantic parse of the inputted natural language sentence.

The second layer accepts this rough sketch as input and outputs the final semantic parse (a 'fine' parse).

We will be reporting on our model's performance on the Geo880 and its improvement over the accuracy of a one-layered TBSP.