Relative Clauses in a Semantic Parser

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24.918 Spring 2016 Project

https://github.com/seveneightn9ne/semantic-parser

1 Introduction

This paper explores the challenges and details of implementing relative clauses as described in Gallego (2004).

1.1 Previous Work

The Semantic Parser system was developed in Fall 2015 as a project for 6.S083 Computation and Linguistics. It parsed English from text into a logical form which was then interpreted and evaluated, and then drew conclusions or found counterexamples to conclusions in the input. The paper describing that project is available here: https://github.com/seveneightn9ne/semantic-parser/raw/master/documentation/semantic-parser-6.pdf

This project builds directly from where last semester's project left off, so all improvements and modifications on top of what's in the previous paper will be here in this paper.

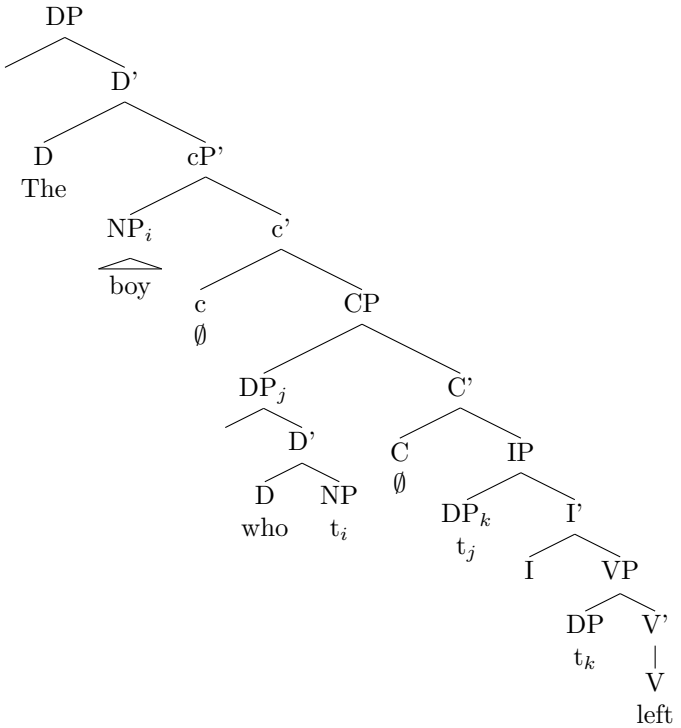
1.2 Goals

The underlying theoretical goal of this project is to try to do things "the way the brain does it" as much as possible, rather than in a way that is more natural to computer programming. This means, for example, a grammer that can parse Jabberwocky (with nonsense nouns, verbs, and adjectives) as opposed to a grammar which uses a static dictionary. This is more computationally difficult because the grammar allows a lot of ambiguity so there are many possible parses that have to be eliminated by later steps. In fact, this is still an open question in linguistics in general: how is the brain doing something that seems computationally infeasable?

The specific goal discussed in this paper is to parse relative clauses as described by Angel Gallego in "T-to-C MOVEMENT IN RELATIVE CLAUSES". That paper was trying to provide a very thorough account of relative clauses including phenomena that is only seen in Romance languages, not English. So the reason for using Gallego's model is not just to be able to express English relative clauses (though his model can express English better than the Semantic Parser's previous model), but also to evaluate his model: by implementing it in a system that actually does semantic parsing we would verify that the model has some degree of coherency.

1.3 Gallego's Relative Clauses

Here is the basic structure of a Gallego relative clause:



2 Implementation

2.1 Modifications to the Grammar

2.2 Features

2.3 Probably more here, and in a coherent order

2.4 Feature Agreement