A Preliminary Study on the Robustness and Generalization of Role Sets for Semantic Role Labeling

Beñat Zapirain[1], Eneko Agirre[1], and Lluís Màrquez[2]

[1] IXA NLP Group
University of The Basque Country
{benat.zapirain,e.agirre}@ehu.es
[2] TALP Research Center
Technical University of Catalonia
lluism@lsi.upc.edu

Abstract. Most Semantic Role Labeling (SRL) systems rely on available annotated corpora, being PropBank the most widely used corpus so far. Propbank role set is based on theory-neutral numbered arguments, which are linked to fine grained verb-dependant semantic roles through the verb framesets. Recently, thematic roles from the computational verb lexicon VerbNet have been suggested to be more adequate for generalization and portability of SRL systems, since they represent a compact set of verb-independent general roles widely used in linguistic theory. Such thematic roles could also put SRL systems closer to application needs. This paper presents a comparative study of the behavior of a state-of-the-art SRL system on both role role sets based on the SemEval-2007 English dataset, which comprises the 50 most frequent verbs in PropBank.

1 Introduction

Semantic Role Labeling is the problem of analyzing clause predicates in open text by identifying arguments and tagging them with semantic labels indicating the role they play with respect to the verb. Such sentence–level semantic analysis allows to determine "who" did "what" to "whom", "when" and "where", and, thus, characterize the participants and properties of the *events* established by the predicates. This kind of semantic analysis is very interesting for a broad spectrum of NLP applications (information extraction, summarization, question answering, machine translation, etc.), since it opens the avenue for exploiting the semantic relations among linguistic constituents.

The increasing availability of large semantically annotated corpora, like PropBank and FrameNet, has contributed to increase the interest on the automatic development of Semantic Role Labeling systems in the last five years. Since Gildea and Jurafsky's initial work "Automatic Labeling of Semantic Roles" [3] on FrameNet-based SRL, many researchers have devoted their efforts on this exciting and relatively new task. Two evaluation exercises on SRL were conducted by the 'shared tasks' of CoNLL-2004 and CoNLL-2005 conferences [1, 2], bringing to scene a comparative analysis of almost 30 competitive systems trained on the PropBank corpus. From there, PropBank became the most widely used corpus for training SRL systems.