

Chapter 7

Conclusions

As we mentioned at the beginning of this work, the researchers in Artificial Intelligence, Knowledge Representation, Computer Science, and other fields, are working toward the elaboration of intelligent systems, which are able to use their commonsense knowledge as humans do. The need of a good commonsense knowledge base is obvious. In this work we worked with commonsense knowledge representation and reasoning and our results are listed in continuation.

7.1 Results

One of the major goal of Artificial Intelligence is to supply computers with common sense. We have seen the definition of John McCarthy where common sense knowledge is viewed as the opposite of the specialized knowledge. The study of common sense brings together researchers from different areas: artificial intelligence, philosophy, and cognitive psychology, among others. The point of interest is what it means for people and computers to reason successfully about the world. In this thesis, we have combined different points of view about common sense and discuss them briefly. We can conclude the following:

- Common sense is sound and prudent but often unsophisticated judgment and the unreflective opinions of ordinary persons.
- Commonsense reasoning is a process that involves taking information about certain aspects of a scenario in the world and making inferences about other aspects of the scenario based on our commonsense knowledge, or knowledge of how the world works.
- Commonsense reasoning is frequently non-monotonic.

In the field of Computer Science and Artificial Intelligence, different approaches have been taken to make computers intelligent. In this work we illustrate how ASP can be used to represent commonsense knowledge. This language is convenient, because it has non-monotonic features and the ability to express defaults. The combination of these characteristics make it suitable for knowledge representation, as we explained in Section 3.6.2. In addition, the inference engines of ASP, such as *Smodels* and *DLV* are sufficiently powerful for large applications. We described very simple examples, but the idea is that they can be combined with different modules and produce larger systems. The purpose was to describe the methodology of using ASP for representing commonsense knowledge. This methodology was successfully applied to formalizing small domains, such as the telephone and the ideological conflict. This work is not the first application of ASP to model common sense. However, the domains that we modeled are a new approach. The meaning of what we illustrated is that ASP can be used in all kind of domains with common sense involved- from a simple day life use of a telephone to a social problem involving countries and beliefs. The power of ASP is enormous, that is, if we continue to develop our commonsense knowledge databases, we will be able to build larger applications with a mixture of commonsense knowledge about different domains. And this is the main result of this work: we already start

to move to the achievement of a collection of commonsense rules of all kind of aspects from the world.

7.2 Future work

As computer scientists we are still not accomplished the goals. The computers are still not able to use commonsense reasoning and understand simple facts about every day life, as humans do. But the important point is that a lot of research has been done in the knowledge representation field and we are getting closer to the objectives.

In the future, we want to create large commonsense knowledge bases and be able to construct question answering systems. The authors realize that the ASP rules must be expanded. We think that, in the future, such systems must be develop for more domains and all of them should be unified. Finally, one of our short term goals is the completion of the ideological conflict domain with a complete commonsense knowledge and a good reasoning involved.