Annotated Bibliography

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Introduction

Most of my research this semester centered on learning the basics of the fields my thesis requires, namely natural language processing and knowledge representation. To this end, most of these sources are not journal publications but rather reference sources and introductory texts. Given that we do not have classes in these subjects, I spent most of my time acquiring the basic knowledge of the fields. I have also included the tools and software packages I found useful and which may end up playing a role in my thesis.

References

[1] D. Grigorova and N. Nikolov, "Knowledge representation in systems with natural language interface," in *Proceedings of the 2007 international conference on Computer systems and technologies*, ser. CompSysTech '07. New York, NY, USA: ACM, 2007, pp. 68:1–68:6. [Online]. Available: http://doi.acm.org/10.1145/1330598.1330670

> This article compares several techniques for parsing and analyzing natural langauge sentences, comparing their advantages and disadvantages. Their comparisons are based upon the primary literature in which these techniques were introduced, rather than on a practical application. The paper also covers

their implementation of a frame structure as a model for real-world objects and their algorithm for using that frame structure to build a semantic knowledge tree. Their analyzer allows the user to build a semantic representation of a sentence and its knowledge. I include this article for its comparison of analysis techniques and as a jumping-board to other literature.

[2] D. Jurafsky and J. H. Martin, *Speech and Language Processing.* Prentice Hall, 2000.

This book is an introductory text to the field of speech and language processing, written to serve as the textbook for a course on the subject. Topics covered include statistical parsing, tagging, grammars, semantics and meaning and a cursory overview of knowledge representation. I used to source to learn the basics of natural langauge processing. Much of its focus is on lower-level ideas, leaving applications and complex knowledge representation to other texts.

[3] Q. Qu, J. Qiu, C. Sun, and Y. Wang, "Graph-based knowledge representation model and pattern retrieval," in *Fuzzy Systems and Knowledge Discovery, 2008. FSKD '08. Fifth International Conference on*, vol. 5, 2008, pp. 541 –545.

In this paper, the authors propose a model for representing and retreiving knowledge called a "feature event dependency graph," in which events and their relevant links are represented as a weighted directional graph, allowing the graph to model time and dependency. They propose a set of algorithms for creating and using this graph. Knowledge patterns are retrieved as sets of event chains, keeping their context intact. The authors argue that their model offers better performance and ease-of-use than comparable efforts. The FEDG proposed here is similar to the technique I plan to use in modelling knowledge.

[4] T. Seagran, C. Evans, and J. Taylor, *Programming the Semantic Web*. O'Reilly Media, 2009.

This book serves as an introduction to applications of semantic tools and provides a basic understanding of knowledge representation. Meant for developers of data-rich web applications, this text focuses entirely on the practical applications of the field, leaving theoretical insights to more academic sources.