

15-300 Project Milestone Report

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0.1 Milestone Progress

My primary milestone goal was to install Scone and interact with it enough to be able to create my own tiny knowledge base and interact with the information. I have achieved this goal: Scone is installed on my local machine and I have written a small knowledge base file that begins describing the knowledge of the Solar System. I have sent this file to Dr. Fahlman to review and while he suggested improvements, he accepted it as proof of my getting familiarized with Scone. As planned, I have read more papers published by the research group as well as other sources provided by Dr. Fahlman, which were more useful after getting a bit more familiar. I also do have a better reading-level understanding of Common Lisp than before, although I did not end up starting to learn Common Lisp itself (although that was a "hopefully" part of the milestone goal). There have been no major surprises so far that I can recall.

0.2 Changes

As described in my project proposal earlier, the actual project I will be working on had not been determined yet. However, now that I have become more familiar with Scone, Professor Fahlman and I have agreed on and developed a project description for the next semester.

Currently, adding new knowledge into Scone is usually done by hand, which is a time-consuming process, as I learned first-hand. In an effort to increase the amount of knowledge it operates with, Scone has also imported WordNet, a lexical database that provides relationships between words and/or phrases in a manner similar to Scone's representation of concept nodes and supersets. However, since these relationships are usually the only knowledge that is easy to import, such an import is not tremendously useful.

On the other hand, WordNet provides additional information about its vocabulary in "glosses" or dictionary-style definitions in English, which are useful sources of additional knowledge for Scone. Thus, my project for next semester is to explore the extraction of useful symbolic knowledge structures from glosses and dictionary definitions into Scone, which will require some natural language understanding. Professor James Allen and his colleagues at the University of Rochester and the Institute for Human and Machine Cognition in Florida have done some pioneering work in extracting such information, although

they were targeting the Episodic Logic system developed by Lenhart Schubert. My project will build upon Professor Allen's work while exploring other ideas and techniques.

It is hard to to know how successful the effort will be, but ideally it will produce both additional knowledge for Scone and some tools used for its extraction.

0.3 Revisions to Milestones

Since I have a defined project, I also do have updated milestones. Here they are:

January 25th: manual exploration of WordNet definitions vs how they would need to be represented in Scone.

February 8th: a prototype of the tool that will extract information into an intermediate representation.

February 22nd: a tool that can extract is-a type links from definitons.

March 14th: the addition of relations between concepts generated from WordNet information.

March 28th: the addition of roles between concepts generated from WordNet information.

April 11th: a limited import of WordNet knowledge using my tool to check for correctness.

April 25th: the addition of more knowledge into Scone and completed tools used for its extraction.

0.4 Resources Needed

Now I have some of the resources I need. I will mostly be working using Scone and WordNet, the former of which I already have and the the latter of which is available as a free download. I believe I will be using Python for the tools I write. Otherwise, Dr. Fahlman has said that he will contact Dr. Allen to see whether he would be able and willing to share any other tools that might be useful, as they have been in contact about this type of project previously.