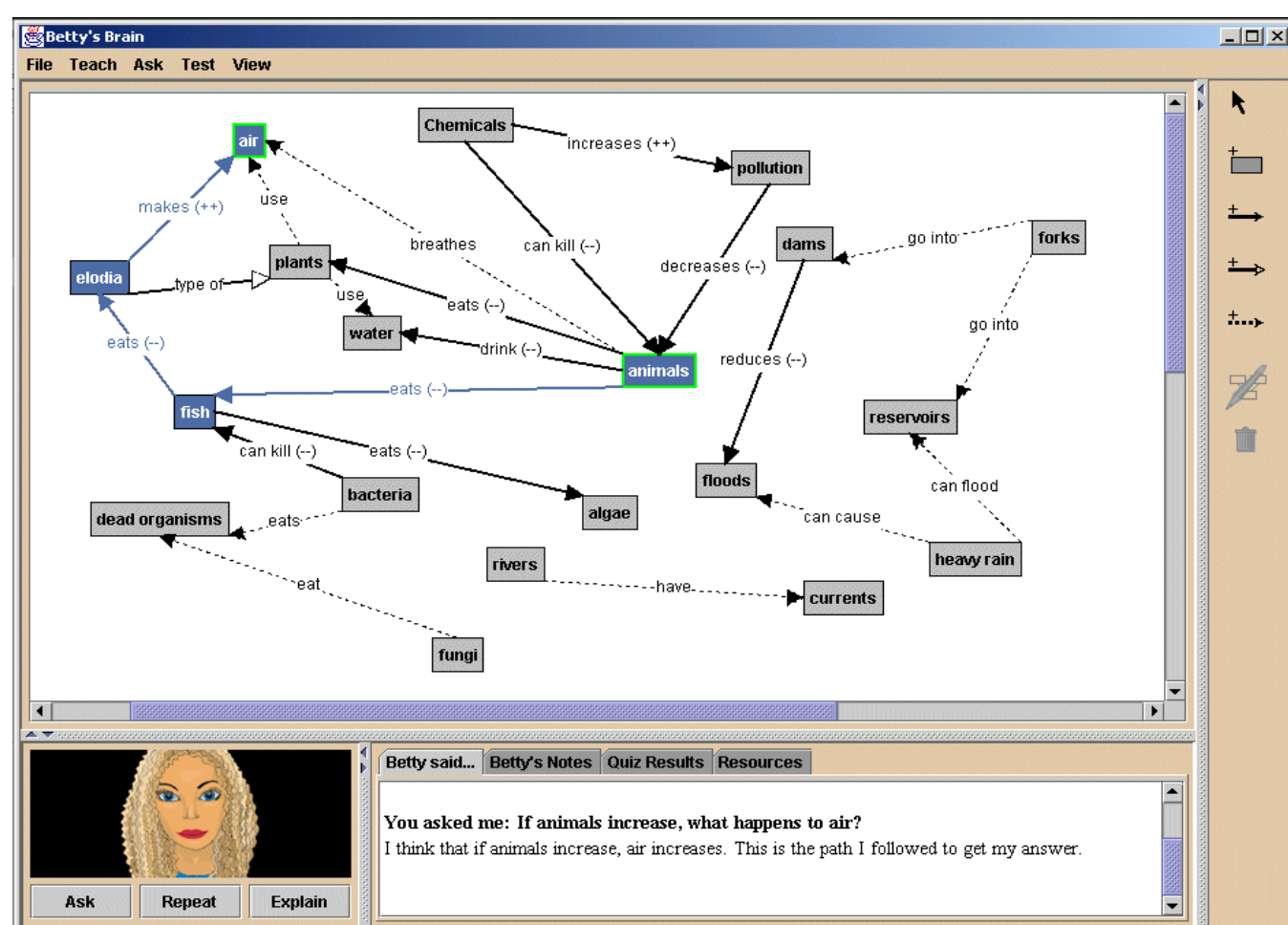# Concept Visualization for Ontologies of Learning Agents

Computer Systems Technology Lab 2006 – 2007

by Yu Suo

Abstract

The purpose of this project is to research, create, and program a concept visualization tool to easily browse small to large scale semantic networks and ontologies of an artificial intelligence. This relates closely to graph theory and graph layout algorithms but adds another factor by taking into account the relationships between different nodes and elements of a learning agent when drawing the graph.

Background

The Disciple Learning Agent is an artificial intelligence that can be adapted for many purposes such as military operations, teaching, and traveling. It is currently being developed at the George Mason University – Learning Agents Center. The project will be used mainly by those who are not proficient at Computer Science. Therefore, this project aims to distribute information about the artificial intelligence in an easy and usable way.
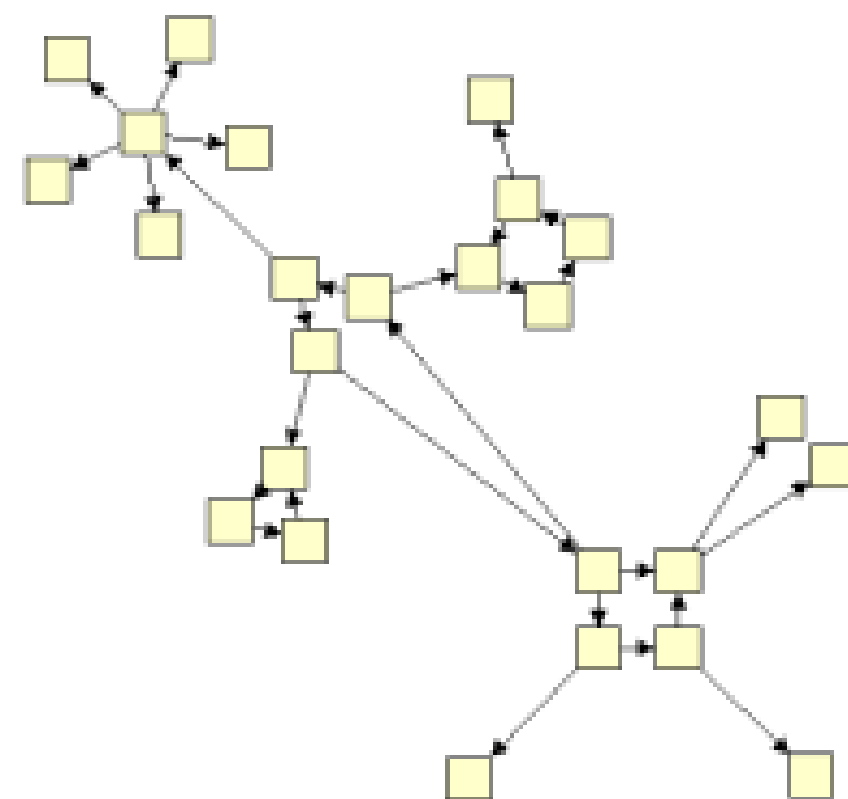
Results and Conclusions

At this point, most of the basic preparation is complete and work on the algorithmic portion of this research project can proceed. Programming the basic classes has really given me insight on how Object Oriented Programming is useful in real world applications and why there needs to be strict guidelines for implementing new classes into a larger project.

Procedure and Methodology

The Disciple Learning Agent is currently written in JAVA and called JDisciple. Eclipse is used to provide a basic organized structure for the entire project. This part of the project will be coded in many different iterations starting with the simplest of cases and gradually moving to more advanced cases. This will involve an implementation of a basic element picking algorithm such as a Greedy, and a basic graph layout algorithm to place and make space for elements on the screen. Then, the algorithms will improved upon every iteration by modifying the heuristics to make it more efficient, faster, and usable for larger ontologies.

Expected Future Results

The first algorithmic version of my program will involve manipulation of small explanation element lists in a Disciple agent and represent the elements in an understandable, graphical way. Then, after each working iteration, I hope to expand the algorithm for more general and larger test cases.