Rantbot
(preliminary title)

Background

In artificial intelligence, simulation of human conversation can be done through a chatterbot[1]. Having a chatterbot respond to text input from a user can be achieved with pattern matching, but there is still the reasoning part of a human which needs to be simulated. This thesis will investigate an approach to reasoning, which uses an associative structure system based on a recurrent neural network.

Project

The goal of the project is to implement a chatterbot which will rant about a certain topic (a political opinion for example). A database with a natural language interface will be used by the bot to derive its output, which will be in text format.

The implementation consist of two parts, where the first part is to create a recurrent neural network structure with support for reinforcement learning. Nodes in the network represent concepts, and these will have a varying degree of logic connectivity between them. When the neural network receives a certain input, it will generate a sequence of logically connected concepts as its output. Internally, it will create new concepts that are based on existing ones that are related in some way. This first part will be programmed in LISP and a small example neural network will be created as a proof of concept.

Having done the neural network system, the second part of the implementation will then be to connect the system to STEP[2], and have the network grab its concepts from a relational database. The final task is then to fill the database with the appropriate concepts and to teach the bot to act in a way that is similar to human ranting behavior.

The theoretical part of the thesis will be to study topics such as Hebbian learning, recurrent neural networks, reinforcement learning and the type/token problem.

Work on the project will begin in early September 2006, and the preliminary schedule is as follows.

September-October:	First part of implementation.
October-November:	Second part of implementation.
November-December:	Literature study.
December-January:	Report writing.

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[1] A chatterbot is a computer program simulating human conversation.
[2] STEP is a natural language interface to relational databases developed by Michael Minock.