Question Resolution Algorithm for AVARI

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Introduction

The project that I worked on this summer was the team project called AVARI, and my part of the project was called the Question Resolution Algorithm. The general purpose of this algorithm is to take the question that the user asks and then find the answer. We really wanted to create an algorithm that had a human centered approach. We wanted AVARI to retrieve the answer in a way that was close to how people would normally search for an answer. In order for this algorithm to work, I have to get information from the Voice Recognition part and the Database. Once I have that information, my algorithm is able to go to work.

Background

There are not many question answering algorithms that are actually in existence. Most types of algorithms are based on a type of search engine like Google. Typically, these search engines respond with a list of choices that could possible be the answer, and it is up to the user to find what they want. There is a web based program, called START, that uses natural language to ask questions, but the user must type in the question, and then the program displays the answer on the screen. Most programs just search web pages and paragraphs looking for the words the user typed in.

Research

- Question Resolution Algorithm
  - o Well, the first thing I do in the algorithm is get the question that was asked, and the category that the question is from. I then break the question into its individual terms. Then, I do a query into the database using those terms and the category. I use the top three results. If the first result has the most number of matches, then I send that answer to the speech part. If the top two results have the same number of matches, I first check the answers, and if the answers are the same I send it to the speech department, but if the answers are different I ask the user which one they wanted to ask. Then the last scenario is if all three of the top results have the same number of matches. Again, I check to see if the answers are the same, and if they are I send it to the speech department. If two out of the three are the same, then I ask the user which one they meant, but if all three of the answers are different, I choose the answer that has the highest popularity, which means the answer that has been retrieved the most.
  - o Every time an answer is retrieved from the database, we increment the popularity count by one.
  - o This algorithm uses the voice recognition part and the database

Research (cont.)

- Created Terms Table
  - o I wrote code that would take the questions out of the database one by one and then break the string into individual words and then input each individual term into a terms table. We started out doing this by hand, but I then realized that we would be entering terms into the database for a million years. We ended up with more than 34 thousand terms.
- Created The Look of AVARI
  - o I worked on her hair and make-up. We wanted her to look young,

AVARI

Impact

- This algorithm is the glue between the voice recognition and the database, without this algorithm AVARI would recognize what is being said but she would never have a response, and the database would be full of information that would never be used

Conclusions

- I learned how to use PHP and JavaScript, which are both scripting languages
- I learned how to work with databases
  - How to create and delete them
  - Also, how to do a query and to select specific data from a database

Future Work

Well, AVARI has a bright future ahead of her. We would like to put the finished version of AVARI on the third floor of Woodward Hall. We would like to put her out for use for a semester. We plan on recording everything; what people ask her and what AVARI responds with. We would then use that data to see what people really want to talk about. We will also be able to tell what kind of form the questions are in. We would be able to tell if people use her properly. There is tons of feedback we could get from this experiment. We would also like to put more of the professors into the database. At the moment we only have the information for seventeen of the professors. It would also be neat if we could have more categories of information.

The Entire AVARI Team