Class Project (Extension to A3)

This is also a group activity. This assignment is marked out of 75 points

Due Date

April 5th , 2020, 11:59 PM.

Programming Features (40 points)

For this assignment, you will take the output of your group's A2 and continue development with it by adding extra features.

In this assignment, we will use a "buffet" setup for developing your program. Select any feature(s) from the list below to work on. If you have suggestions, bring it up with the instructor and it can be added to the list with an appropriate number of points.

- **5 points**: Make a simple GUI so that the user is typing into a nicer interface and can view a recent history of the conversation.
- **2 points**: Add an extra topic to your agent's repertoire. Ensure this topic has similarities with the original topic. For example, if your original topic is volleyball, you may want to add basketball as a second topic.
- **3 points**: Add a feature that enables your agent to give at least 5 different reasonable responses when the user enters something outside the two topics.
- **5 points**: Add a feature that enables your agent to handle spelling mistakes of the words that your agent is supposed to recognize. **Do not hardcode your solution.** Develop a general feature you can use for all the words your agent has, rather than hardcoding a bunch of possible mistakes people could make. For example, use the Porter Stemmer, or some other pre-established algorithm.
- **10 points each**: Use of language toolkits, incorporate feature to improve your conversation's flow:
  - Synonym recognition - WordNet (you'll need a Java API to it)
  - POS tagging - Stanford toolkit, OpenNLP
  - Named entity recognition - Stanford toolkit, OpenNLP
  - Phrasal - Stanford toolkit
  - Coreference Resolution - Stanford toolkit, OpenNLP
  - Sentiment analysis tools - Stanford toolkit
- **15 points**: Conversation with another agent (built by a student in this class) via sockets

Note: any other feature, please discuss before implementing…

Important Note: The number of points associated with each feature is to indicate the **maximum** number of points you could get for that feature. The quality of the feature will still need to be assessed upon submission.

Documentation (30 points)

You are to submit the following for your system:

- **2 points**: README file in your repository describing what you've done. You are likely to just add onto the README file from A2 in this case. If you've changed a lot since A2, you will have to rewrite the README so it reflects your current submission.
- **5 points**: At the end of your README file, include:
  - a list of each feature you programmed for this assignment
  - for each item on that list, explain briefly **how** you used that feature to improve your agent's conversation or your overall system
  - for each explanation, give a snippet of a conversation that demonstrates your feature
- **3 points**: Provide a Level 0 DFD for your system with description.
- **5 points**: Provide a Level 1 DFD for your system with description.
- **5 points:** Submission of your GitHub repository. Graph showing different features developed on a separate branch and the commits made in the repository.
- **5 points**: Include sample output in your project report. Have one dialogue (at least 30 turns) that show a good or feasible conversation -- ensure your new features are demonstrated! Document a list of limitations of your program, and have at least two short dialogues that show when your agent is not able to handle the conversation properly.
- **5 points**: Based on your system, include a list of at least 5 features that you can extract from your code or design that can be shared with others as an API.

Presentation (5 points)

A 60 to 90 second video of your assignment showing:

- A brief description of your program's conversational topic
- Each feature you've programmed and how you used it to improve either the conversation or the overall system (since A2)
- A description of your DFDs
- You should narrate and/or provide subtitles

Evaluation Criteria

- **30-50 points:** For all chosen programming features listed above.
- **30 points:** For all the documentation listed above.
- **5 points:** Video submission.

What to Submit

Put all your documentation into one report and submit it as a PDF (on Canvas). Be sure to include the URL to your repository for this assignment in the report.

Be sure to include your **full name** in your README file.