Overview

Derin Gezgin | COM110: Project Proposal (counts as Quiz 5)

Some basic criteria for your project is as follows: groups of 2-3 folks with similar interest and learning goals with be brought together (either by yourselves or with instructor assistance). You are expected to first develop an individual idea here in this proposal phase and then will discuss how your idea and your group can be brought into one learning space. Some ways are to have individual members working on variations of the group idea, or to have individual members each working on one part of the goal. You are expected to come to the normal lecture time and then form into groups and make some progress in each class! This progress will be checked by you instructor in each class and lab and these will make up the parts of your total project grade. According to you syllabus, the main parts of the project will be (1) the prototype phase (initial completion of some of your proposal goals, each group has to do only one of these), (2) the presentation phase (each group only has to do one of these), where your group will put together a few slides and some written details of what you were interested in, why and what you learned during the in class session, and finally (3) the reflection phase where you will write up your final results (again only one for the group is required). You will write this like a regular paper (MLA style) and will be sure to cite the sources you used and python libraries that went into your code.

Proposal

We have spent time in this course covering important computing topics such as identity and belonging, the use of artificial intelligence, and mostly programming and problem solving using the python3 programming language. We were able to write code to make a scientific calculator (with plotting of course using matplotlib), a choose your own adventure book, a data cleaning, reformatting, transformation and visualization system, audio signal processing tools, image processing tools, a word cloud and language analysis system, biological sequence analysis tools and platform and puzzle video games. Take a moment and look back at all of your **Program and Labs** these will serve as a starting point for your group project. Each response should be a paragraph at minimum (3-5 sentences) except for part **[1]** which is to rank your assignments.

[1 25pts] Rank the **Program** and **Labs** in order of your favorite to least favorite. The highest-ranking item (value=1) would be the assignment you found the most interesting or fun or had the highest learning value to you. This would be assigned the rank of 1. For example, if my favorite item was Program5 I would express it as: **1**:Program5, **2**:Program3, ...

I ranked the assignments by how much I enjoyed completing them and how much I learned from them.

1. **LAB 10**: Visualizing Data
2. **LAB 7**: Image Processing
3. **Program 3**: Processing Audio
4. **LAB 9**: Biological Sequence Analysis
5. **Program 4**: Dices
6. **LAB 6**: Visualizing Time Series Data
7. **LAB 8**: Language Analysis
8. **Program 5**: Modding Video Games
9. **LAB 5**: Loops as Automation
10. **Program 2**: Control Structures
11. **LAB 4**: Cleaning Input Data
12. **LAB 3**: Writing Functions
13. **LAB 2**: R/W files, string processing
14. **Program 1**: Intro
15. **LAB 1**: Intro

[2 50pts] For your top three ranked items in **[1]** explain your criteria of how these ended up on the top of your list.

LAB 10*: Visualizing Data*

This LAB was the most fun lab that I completed in the course. Even though it was complicated to complete, visualizing large data sets and seeing relations between them was fun. I think visualization is critical in programming because it's the bridge between the programmer and the end-user. Visualizing time-series data with different methods is useful to understand data over time. Visualization is an area that I'd like to explore further.

LAB 7*: Image Processing*

This LAB was also one of my favorites. Actually, I wasn't sure to put this one or LAB 10 in first place. The reason that I found this LAB very entertaining and informative is how easy it can be to modify images using Python. I've never thought that image processing is possible with Python, and I think it has a lot of potential after this LAB. Being able to blur a specific part of an image with a few lines of code was very interesting, and this will be a thing that I'll be using in my daily life. Image processing is an exciting area that I'd like to do more projects on.

Program 3*: Processing Audio*

Program 3 was exciting to complete. In this program, I was able to make sound filters, which changed an audio track. This was very interesting to work on. I think that, as a musician, I can do projects to clean old recordings, create sound changers, etc. As I stated in my two previous rankings, real-world applications of Python scripts interest me a lot.

[3 50pts] If you had to spend the next three weeks working on a project where you had to spend each class session and the next two Labs doing, what kind of computational project would you want to work on. One way to answer this is to think about **[1]** and **[2]** and think where would you want to go next with that? The other way to think about this is to consider what skill or item we covered would you want to develop further and get better at?

My first idea is to work on a project similar to the LAB10, where I'll work on time-series data. For example, I'd like to work on the time-series data on economics during the COVID-19 pandemic and see the impact of the pandemic on different economic sectors and companies. I know some companies recorded significant growth during the pandemic, and some did the reverse. I'd like to work on this area and visualize the impact of the pandemic on the economy.

My second project idea is to create an image editor with Python using a library to create visual interfaces, like Tkinter. This program idea of mine is to crop images, blur specific parts of images, draw on images, etc. I prefer to work on the first idea I presented as a final project because I'd like to add many features to this project. I'll have to learn a new library Tkinter, which will take more than a month to complete a well-designed project, but I wanted to mention this project idea as well, which I might work on in the winter break.