Computing 2 - Final Project - Spring 2024

Project Overview

The final project is designed to encapsulate the knowledge and skills acquired in INEG 2214 and INEG 2223. Students are tasked with identifying and solving a real-world problem by developing a software solution that utilizes real data. This project requires exploration beyond the tools showcased explicitly in the classroom, aiming for data analytics depth and solving substantial engineering challenges.

Project Ideas

Students are free to be as creative as they desire in choosing their project topics. Here are some resources for project ideas and/or datasets.

- Developing Spreadsheet-based Decision Support Systems Note that the projects at this link were created for spreadsheet-based implementation and would likely need modification.
- kaggle.com
- datasetsearch.research.google.com
- NEOS project OR case studies
- UCI Machine Learning Database

Requirements

Each project must include the following:

- A Vaadin user interface that a user interacts with
- User-defined method(s) to encapsulate functionality
- Custom class(es) for integration
- JavaDoc documentation to address the functionality of all classes and methods
- Gradle for build automation and dependency management

Each project must make use of at least one of either Smile or Google OR-Tools. While Tablesaw isn't explicitly required, it can prove to be massively beneficial for doing data analytics.

Additional Deliverables

- Group: A project proposal (details below).
- Group: A mid-Project progress report, including preliminary findings, any challenges faced, and a brief code review.
- Group: Documentation explaining all of the functionalities of your software.
- Group: A user guide explaining how to use your software/interface.
- Individual: An `INDEPDENTLY` created video explaining the project as a whole, demonstrating the use of the software, and describing your `specific` contributions to the overall project.
- Individual: A written evaluation explaining the effectiveness and contribution of each team member.

Communication

Each group will have its own Slack channel that will be created that only the group and the instructional team will have access to. This channel will be used for questions, publishing group deliverables, and feedback.

Repos and Data files

There will be two final project repositories. All group members will have access to the repo and will be expected to commit, merge changes, and push updates throughout the project. COMMIT OFTEN! This can and will save you some massive headaches.

- 1st Repo: for early functionality development without the interface.
- 2nd Repo: to house the entire final project.

Data files should be added to the .gitignore, so that they are not synced. Large files can cause commits to fail and `WILL` cause a headache. Manually download the data files on each machine from the source. Provide a link to the source in the `README`.

Project Proposal

The following information must be specified regarding your project in your group Slack channel.

- Name of project
- Description of problem context
- Statement of motivation for why the group is interested in this problem
- Two specific and advanced questions/functionalities that your software is going to answer and/or provide to the user
- Supporting methodologies, steps, functionalities, etc that you may need on the path to answering/completing the previous questions/functionalities.
- Location of the data source for your project (can be web link)

Once your project has been reviewed and approved, you will receive one question/requirement from the instructional team that is specific to the data/topic you have chosen.

Grading

- Proposal Process - 5%
- Mid-Project Report - 10%
- Final Functionalities Achieved and/or Questions Answered - 30%
- Computing Exploration and Analysis Depth - 15%
- User Interface: Functionality, Visual Quality, and User Experience - 10%
- Documentation, User guide, and JavaDoc - 10%
- Video Presentation - 10%
- Milestones Met - 10%

Potential Penalties

- Insufficient Project Contribution
- Late Submissions
- Missing Requirements

Milestones (Due at 5pm unless otherwise specified)

- Draft Proposal: March 26th (Slack)
- Final Proposal Approval: March 29th (Slack)
- Custom Objects and Data Import: April 3rd (GitHub Repo 1)
- Initial Exploratory Data Analysis and/or Steps to Complete Functionality: April 10th (GitHub Repo 1)
- Initial User Interface Design Implemented: April 17th (Github Repo 2)
- Mid-Project Report: April 21st at 11:59pm (Slack)
- Draft of Documentation/User Guide: April 26th (Slack)
- Final Interface and Functionalities: May 3rd at 11:59pm (GitHub Repo 2)
- Final Documentation/User Guide: May 7th at 11:59pm (Slack)
- Video Presentation: May 9th at 11:59pm (Blackboard via Kaltura Media)