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PlotMe – A Data Analyzing/Visualizing Program

Description

There is a lot of open data online that can be very hard to manager and extract information out of. PlotMe will provide its users powerful tools to visualize all that data. It will help find correlations between distinct sets and display the patterns in a meaningful way. This could allow schools, businesses and individuals to see things more clearly from all the information they collect. Overall, it is much easier to see the big picture of things through visualization and PlotMe will do just that with almost no effort by the user.

The Domain

The stake holders involved in this application would generally be anyone who has lots of data that needs analyzing. This could include people working in finance, schools, sports or generally anyone with access to a bunch of information on something.

Due to the broad range of users of this application, it must be trivial to use. The GUI should be simple and precise, and the calculations should be done as fast as possible to provide good user experience. After all, the end goal for the application is to save time and effort of going through all the information manually.

Functional Requirements

The application must:

- Use the MVC design
- The Model will be responsible for getting the data from the files and manipulating it accordingly
- The Model will place the data in an ADT that will allow the View to graph it and the Controller to manipulate it
- Calculations should be done in a reasonably fast time using efficient algorithms
- The View will be responsible for showing the graphs (use the d3js library)
- Controller will be the link that connects the View and the Model with the user's input
- User should be able to change how the information is displayed and the Controller should adjust the View accordingly

Input:

- User should be able to import/upload a dataset from their machine
- The data should be shown to the user (as text) in table format in order for the user to validate that it did in fact upload correctly
- User should then have the option to choose the relevant columns and the type of graph they want to see

Output:

- Should mainly be done in the View
- Should display the appropriate graph (as chosen by the user)
    - Graphs should use animations, colors, sizes, etc. to make it more interactive
- Should list other types of graph the data could be seen in somewhere on the screen

Non-Functional Requirements

Minimum software requirements:

- Browser compatible with HTML5, JavaScript and CSS3

Minimum hardware requirements:

- Mac, Windows or Unix client computers

Input specifications:

- Data provided should be in CSV format
- First line should include names of columns separated by commas
- Lines following should represent the rows with each column separated by a comma
- Should have dependent (e.g. distance) and independent (e.g. id) columns

Output specifications:

- Graphs should be interactive
- Should be visually appealing (different colors, sizes, etc.)
- Should be reliable (i.e. should be retraceable using the text data)

Requirements on the Development and Maintenance Process

- Application should have some way of testing the accuracy of the output
- Maintenance
    - Should be modularized so it's easy to make changes in the future
    - MVC should be implemented well to make the application easily modifiable
    - The structure of the application should be as abstract as possible to accommodate for new features (if added)