Final Comp Sci Project

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Implementing GUI to a Hobby

Graphical User Interface (GUI) is used in everyday life even though most people do not even know what it is. GUI, pronounced gooey, is what allows you to control your computer and smartphone, in a sense. MacOS, Windows 10, Microsoft Windows, Apple iOS, Firefox OS, etc. are examples of GUI used in everyday life, especially if you are a student. Designing GUI can be somewhat difficult but very rewarding. The idea that we chose for our final project was to implement GUI to a common hobby. We decided to graph yearly homeruns of different baseball leagues. To accomplish this feat, we first had to find data of homeruns in the American League, National League and then a total of both leagues together. Our data came from the Baseball Almanac. Then we had to decide on a design for our graph. We decided to have pushbuttons that were assigned to each section of our data (3 total graphs). Pushing these buttons would open the yearly homeruns of the league that got selected. Our other idea was to put in a slider also known as a scrollbar. This slider would effectively show the number of yearly homeruns from 1901 to 2019 which is 118 years. In 1901 the number of homeruns from the American League was 228 and in 2019 the number grew significantly to 3,478 homeruns. To animate the scrollbar, we implemented a pushbutton labeled “Let it Eat” (which is a common baseball term for start this off/let us do this. After pushing this button, the scrollbar runs on its own to show the number of homeruns scored per year over all 118 years for all three of our data sets.

We struggled to figure out the positions of all the buttons in the GUI for a while. It was hard to figure out a placement that looked decent and organized. Going back to the lecture slides from lecture 16 really aided us when we had this problem. The positions of the buttons in the GUI goes [leftSideLocation, bottomLocation, width, height]. With our 3 pushbuttons that pull up the corresponding graphs, we had to position them inside a smaller box which was not processing at first. At one point they completely disappeared which was when a lightbulb went off inside. We had to position the button box in the GUI figure window then fixate the buttons inside the button box. We ended up choosing to put the button box in the middle of the left side of the figure and did our best at centering the buttons inside. Another thing we struggled with was getting the scroll bar to scroll through the given data on our graph. Our scrollbar was animated and moving but did nothing with the graph, almost like they were not connected. We fixed this issue by seeking guidance from Professor Lanik and LA, Emme Campbell (who approved of our project). We had realized that we were posting all the values of the graph to the scroll bar which is what made it seem like it was not moving the graph. We then had to set the scroll bar to only show nine years at a time and increment by one whenever the side arrows were pushed or if the animate button was selected. Our plot also matched by showing the nine years at a time.

This project really helped shape an understanding of how useful GUI and MATLAB really are. In the future, we will be able to use MATLAB in our own engineering research opportunities and share with others using GUI to make the data more understandable to an outside reader. In BSEN (Biosystems Engineering) we use a lot of MATLAB to find quantitative answers (like sum, standard deviation, etc.) to support our data. Implementing GUI could show outsiders why our data is important and better help them understand what is going on within a research topic. In mechanical engineering implementing GUI would be useful to show variables of time vs acceleration of a car, train, plane, etc. Finding and understanding ways we can use MATLAB and GUI in the future has really brought this entire class together. We can now see how useful these kinds of things are in our everyday lives as careless teenagers, students, and engineers.