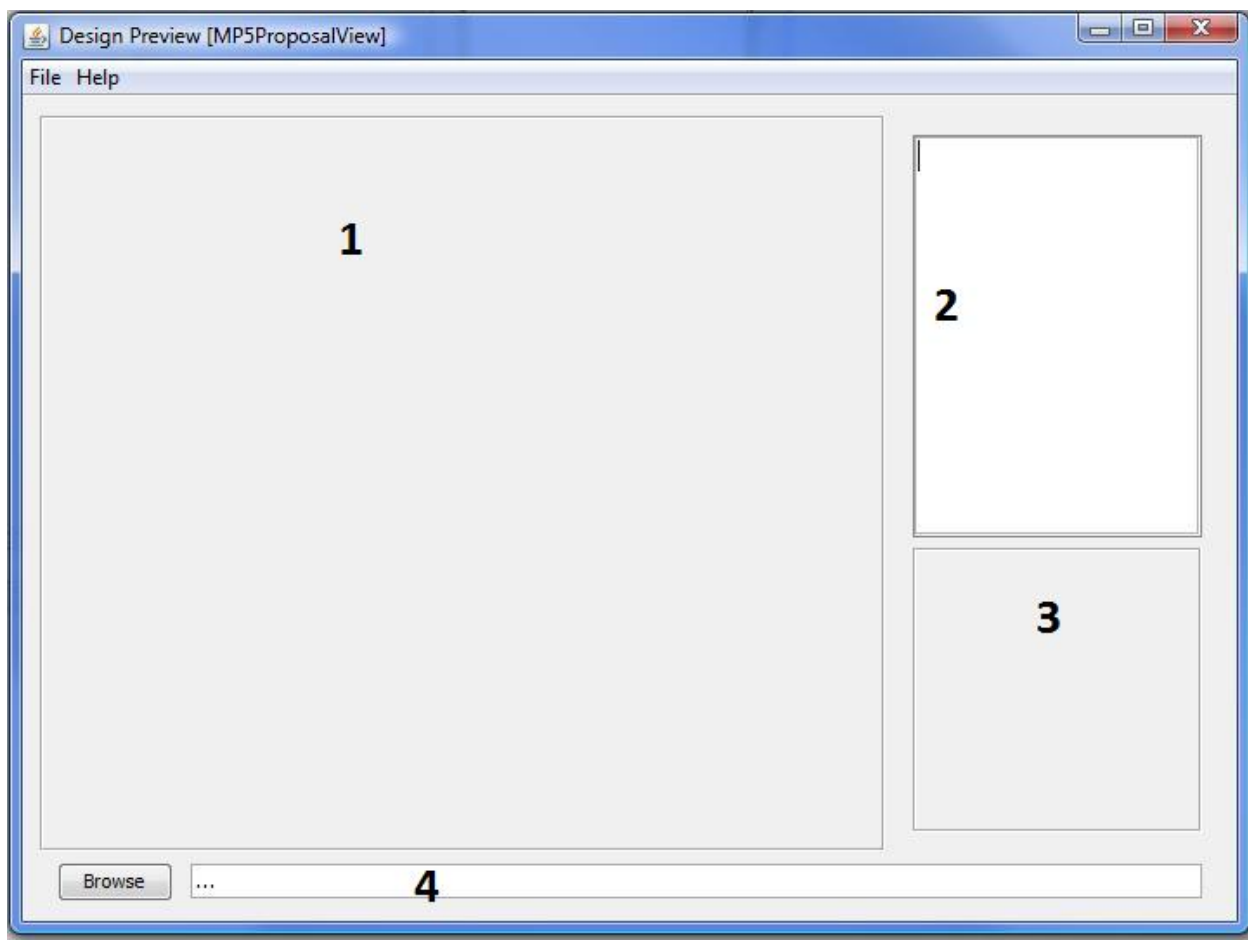


Project Proposal

Summary of project

We propose to make a visual representation of temperatures over a large terrain to be displayed to the user as a 3 Dimensional map. This map will show the user data in a visual format that pertains to elevation for every longitude and latitude, as well as temperature represented by colors ranging from blue (to represent cooler areas), scaling all the way to red (to represent hotter areas). Here is a rough screenshot of what we expect the UI of the program to look like:



1: This is the main window will show a 3d view of the data that has an interactive camera that can move around and zoom into the data.

2: This window will tell you what to do and show data such as the latitude, longitude, elevation, temperature and directions when the mouse is hovering over.

3: This window will either show a different view of the data such as an overview of the entire grid of data or a graph of temperature predictions.

4: This will allow the user to browse for a data file of their choosing.

We plan to let the user move through the map through a camera that the user is able to control to move around to view the different parts of the terrain. We also plan to display additional information, such as a graph of predicted temperatures, in a new or sub-window should the user decide to click on a specific part of the map.

The program itself will be entirely dependent on a data text file that we will provide it to display the information contained within as a visual interpretation of the data. The user will be also be able to provide their own data file and have the information contained within displayed visually (the file, however, must be in a particular format for it to function properly with the program).

Data File

The data file is a .txt file that contains the temperature, latitude, longitude and elevation of multiple points on a plane. The exact format of the file will be as shown in the example below:

```
600 1100

13.117195    49.0   -122.2  -27.0
13.115691    49.0   -122.189705  -27.0
13.114192    49.0   -122.17941   -27.0
13.112677    49.0   -122.16912   -27.0
```

There are two numbers at the head of the file that correspond to

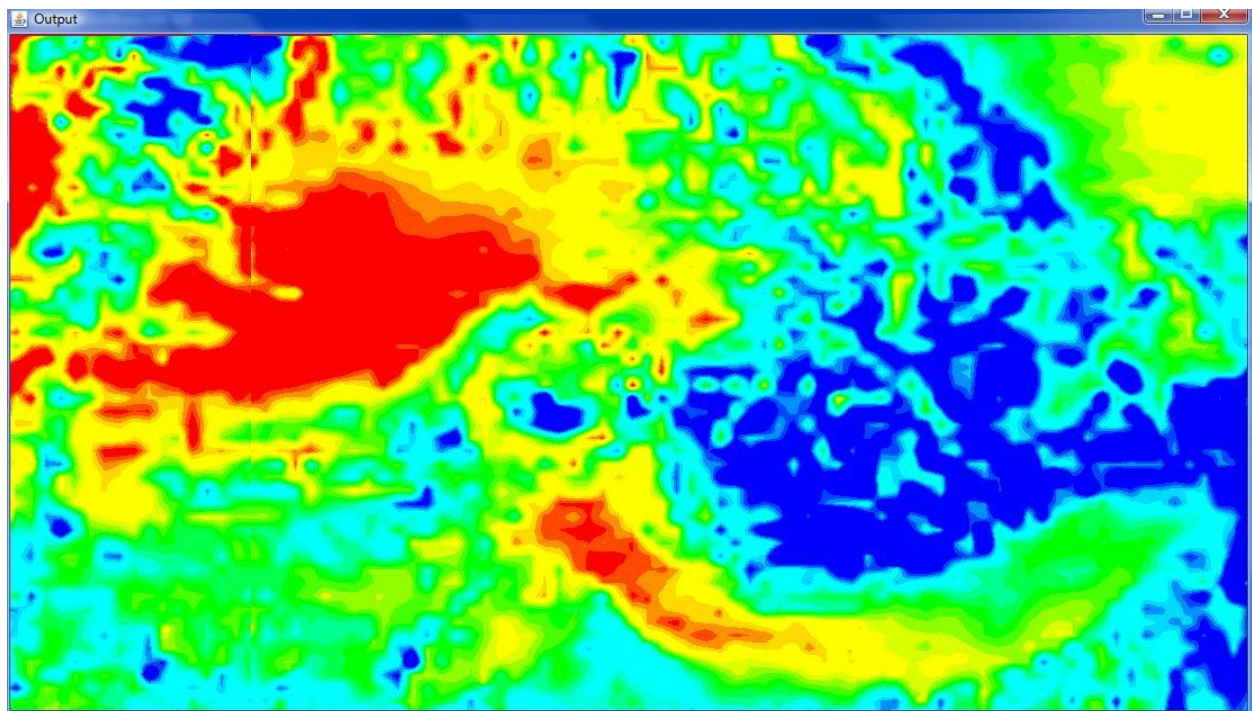
the height and width of the grid of data in the file. in this case the grid is 600 units tall and 1100 wide. The data values are split up with tab (\t) and delimited with a return (\r\n). You will know you have finished the first row of data when you come to an extra return (\r\n) as shown on the next page:

7.550472	49.0	-110.91087	958.32544
7.5819554	49.0	-110.90058	953.5332
7.613437	49.0	-110.89029	948.74097
12.19673	48.988533	-122.2	116.67736
12.103801	48.988533	-122.189705	130.9619
12.010865	48.988533	-122.17941	145.24643

This means that you have read the first 1100 data points and will now start displaying the next row of 1100 values

Data Examples

An example of a 2d view of the data is shown below. You can imagine how it might look in a 3d world with a moving camera and the ability to interactively change the way you are viewing the data by changing the standard deviation of the coloring range or clicking on an area to get a look at the predicted temperatures for the future.



This is a graph of the predicted temperature for one of the sensor points. The red is the actual temperature and blue was the prediction. Purple areas are where the actual and real temperatures overlap.

