

## 1 Introduction

Visualising weather data is very important now days because it helps up study the past trends in the weather situation and helps us in predicting the future trends. It also helps us study the change in weather over the years which further helps us in analysing the reason behind those changes. Weather has become one of the most important part of our lives. Considering these points, I decided to visualise the weather trend in Dublin over the past seventy years that is from 1949 till 2018 and to do in an interactive way.

## 2 Description

Initially I planned to visualise the weather data year wise but as I was going through the data I realised the average values of temperature and precipitations has a huge deviation from the actual values of temperature and rainfall that occurred. After some analysis I concluded that it would be much more accurate if I visualised data on monthly basis across the seventy years.

To visualise the data on monthly basis increased my work by fold because the data set that was available was yearly basis of all months. So, from that single file I had separated data based on months and created twelve different CSV files one for each month in the format (Max temperature, Min Temperature, Rainfall and Year) which I planned to use in my visualisation.

After my data was ready I had to think about ways to visualise that data interactively. So, the first and the foremost way which I thought of was of course to visualise using graphs, the most traditional and proven way to describe a data. But to do something extra and make the visualisation more interactive I started thinking of different ways to visualise then I thought of solar system and space and I thought why not visualise the weather data using the points revolving in space in the orbital path.

Using the Min Temperature, Max Temperature, and Rainfall I created a data visualisation in which seventy points representing seventy years trace a path that is Min Temperature, Max Temperature, and Rainfall of that month over the years and the pattern is complete when all the seventy points have traced their paths. If in case, there was a unusual change in the weather in the month in a particular year and you can easily see the path of that year is hugely deviated from the rest of the paths that is from rest of the years when weather was more or less the usual for instance December. I used Keyboard keys that a user can use to toggle between months,

1=Jan, 2=Feb, 3=Mar, 4=April, 5=May, 6=June, 7=July, 8=August, 9= Sept, a= Oct, b= Nov and c= Dec.

From the graph you can visualise the Minimum Temperature and Maximum Temperature over the years. You can also visualise the rainfall in a every month over the years. I used Keyboard keys that a user can use to toggle between months,

q=Jan, w=Feb, e=Mar, r=April, t=May, y=June, u=July, i=August, o= Sept, p= Oct, z= Nov and x= Dec.

Since the space to visualise the data on screen is less hence I had to scale the data, I took range for temperature as -5C to 25C and scaled it according to my screen resolution. Whereas I took range for rainfall, 0 till 1000mm and scaled it to my screen resolution. When we visualise the graph, one might say why is rainfall less than the Minimum temperature, but one must realise that the range of temperature and rainfall are different and hence they are scaled differently.

If I talk about the outcome of my visualisation, it is a unique way to visualise weather and its very interactive as well. We can study the trends of the weather over the years using 3D visualisation as well as the Graphs. But there's always room for improvement, I feel that someone who will see at the visualisation first time might find it difficult to read so to I could have included more numerical values in both types of visualisation I have used so the user might know how is it actually visualising the temperature and rainfall but even now if the user looks at the visualisation of one or two months and compare them, they will get an idea about how the visualisation is actually working.

### **3 Citing third party resources**

I was able to learn a lot from a YouTube channel called “the coding train”, as it is especially for those who are willing to explore different concepts of processing.

As well as the official website of processing was very useful in leaning about how to sue various functions of processing.

I referred to various code snippets online to get familiar with the way to solve a particular problem.

Lecture notes and the books referred in the lectures was also helpful.

Last but not the least the source of my data was Met Éireann.

### **References**

[1] Copyright Met Éireann

[www.met.ie](http://www.met.ie)

[2] [https://www.youtube.com/channel/UCvigXvBlbQiydffZU7m1\\_aw](https://www.youtube.com/channel/UCvigXvBlbQiydffZU7m1_aw)

[3] [processing.org](http://processing.org)