ADSEI-B

Data Visualization Project

(Trends of climate change)

DEAKIN UNIVERSITY

ADSEI

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Data Visualization Project

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Client's Overview

- ADSEI is an Australian Data Science Education Institute.
- ADSEI are registered charity using Data Science to engage students with technology and give them the tools they need to create real and positive change in their communities.
- ADSEI aims to support teachers to use Data Science to create genuine learning opportunities within their own disciplines.

Source: https://adsei.org/

Problem Definition

Visualization of a selected data set for meaningful insight generation.

- We are in an era where data has a number of hidden things abstracted.
- Deriving information from these raw datasets help in adding a meaningful conclusion. One of the approaches to perform it is to develop a tool that helps for visualizing data-sets in different meaningful patterns.
- The main aim of this project is to deduce visualization pattern of selected data set that would help teachers and their class to explore it in an interactive, engaging way deriving various meaningful insights.

Our Approach

Data Selection

At this stage, we will chose the most appropriate data having wider scope and priority.

Data Cleansing

- We perform filtrations as per the requirement using different platforms for necessary visualizations.

Data Visualization

- The data shall be visualized using different models as scatterplots, histograms, pie charts, statistical findings, etc. as per users selection.

Data Prediction (Future Scope)

- A simple prediction shall be deduced on basis of the data analysed for example, what will be the temperature in 2030, etc.

Data Selection

Dataset:Climate Change: Earth Surface Temperature Data

Source: http://berkeleyearth.org/

We are well aware of the fact that the global world temperature is on a rise every day. The imbalance of mercury with unusual rise and fall leads a potential thread to the global humankind. The core reason of selection of climatic change data-set is to visualize all different data patterns available from the prospect of reflecting the patterns in temperature change which could describe itself the potential threats and measure we shall take for solving the issues encountered. As a wider scope we will be categorizing the data as per decades and predict the temperature of next 20 years on basis of the dataset analysed.

Data Selection Contd.

Climate Change Data for visualizing different patterns.

Attribute Name	Type	Description
Dt	Date	Defines the date of record taken
AverageTemperature	Real	Defines the recorded average temperature of one day.
AverageTemperatureUncertainty	Real	The difference/average errors or deviation.
City	Text	The city where temperature has been measured.
Country	Text	The country where temperature has been measured.
Latitude	Real	Latitude of the place.
Longitude	Real	Longitude of the place.

The data selected is taken from, Source: berkeleyearth.org

Selection of Tools

It is to be noted that the tools and frameworks that we have selected are tentative and can be changed in the initial stages of the project if required.

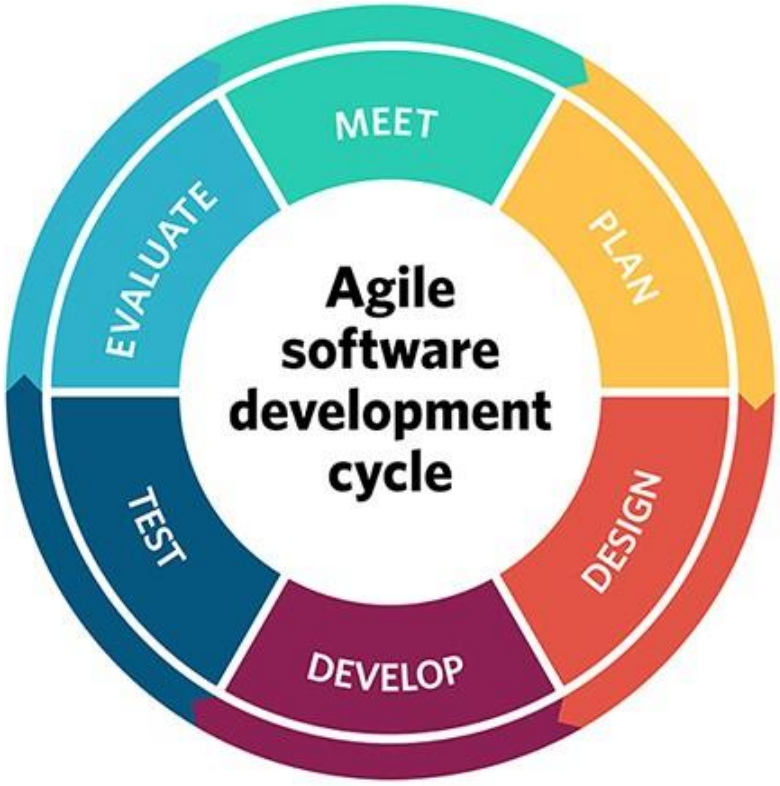
Front End Tech – HTML & CSS and Bootstrapping Framework.
Back End Tech – NodeJS and Python.
Database Tech – IBM Cloud.
Visualization Tool – D3.JS, nvd3

RoadMap

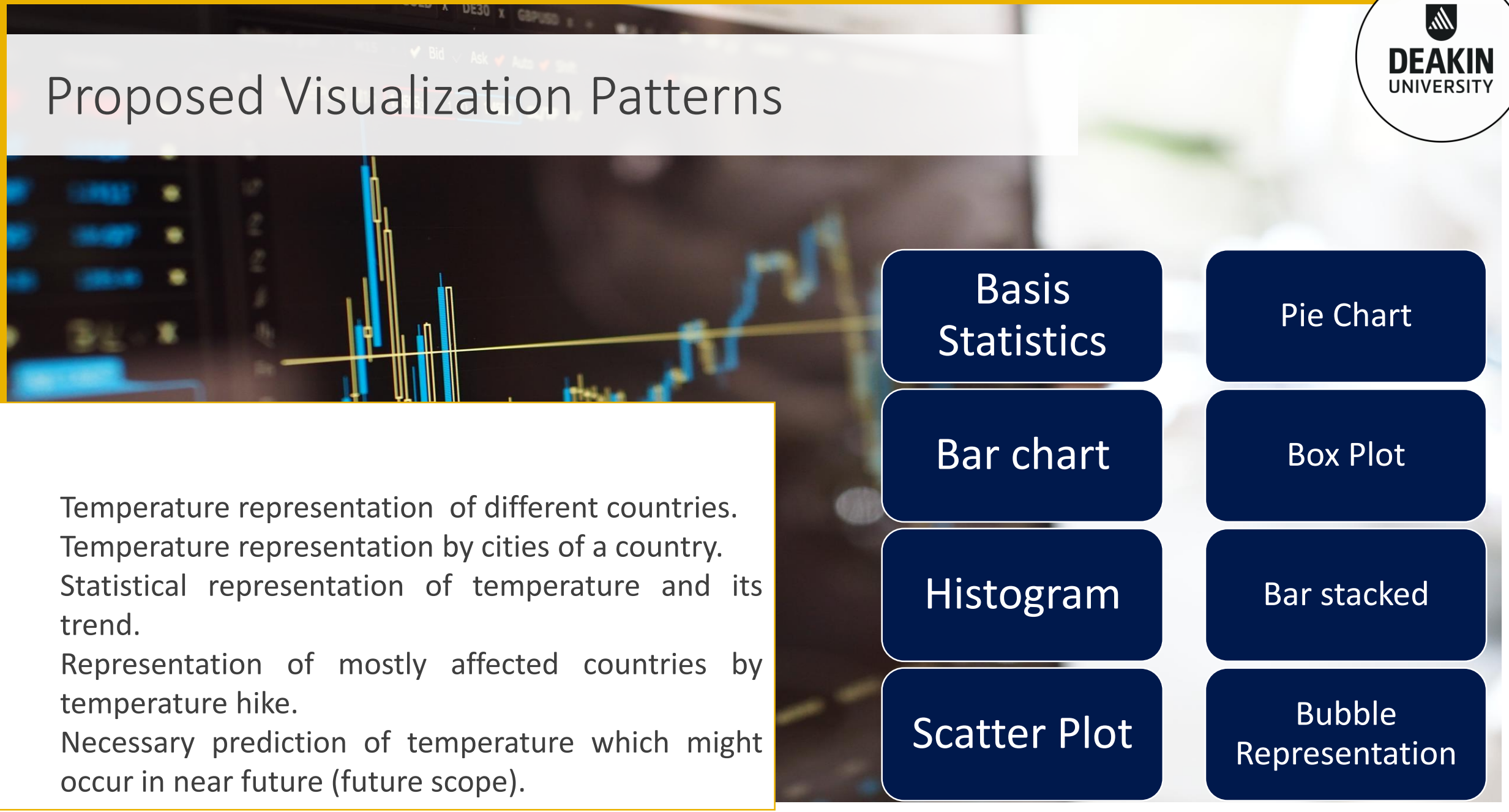
We will divide the project into roughly **5 Sprints** focusing on the different stages of the project:

1. **Project Planning**
2. **Project Analysis & Design**
3. **Project Development**
4. **Testing & Deployment Phase**

At the end of each sprint we will present to our Supervisor and client with completed deliverables.



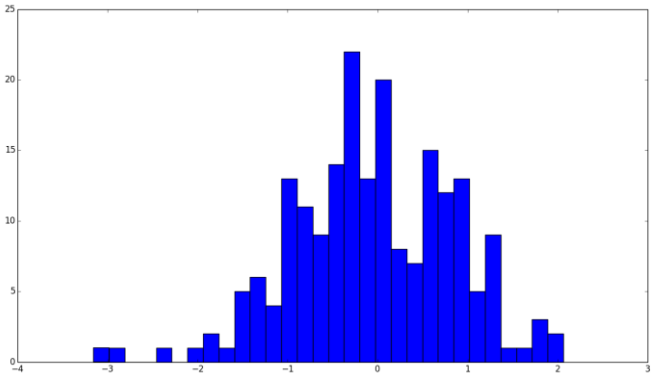
Proposed Visualization Patterns

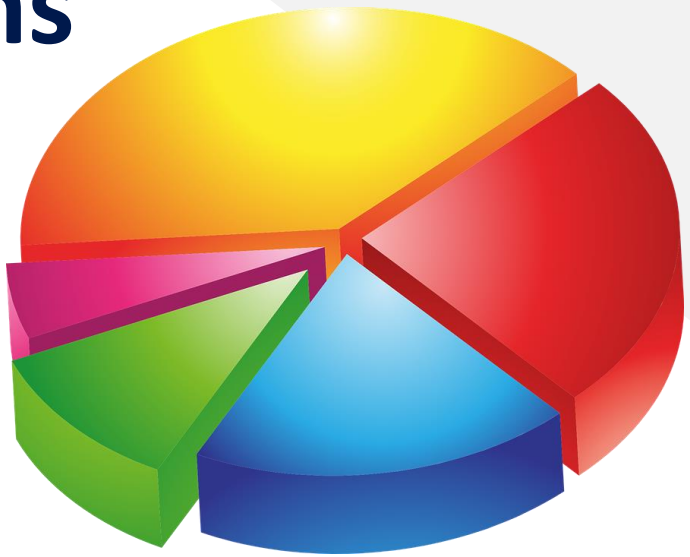


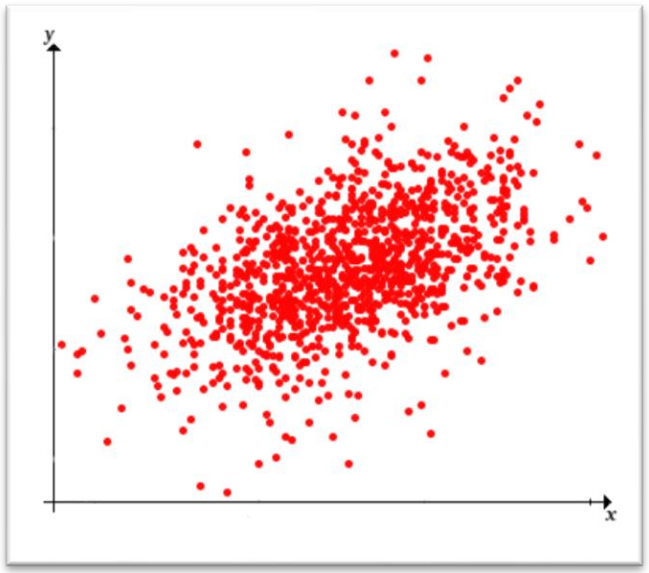
Temperature representation of different countries.
Temperature representation by cities of a country.
Statistical representation of temperature and its trend.
Representation of mostly affected countries by temperature hike.
Necessary prediction of temperature which might occur in near future (future scope).

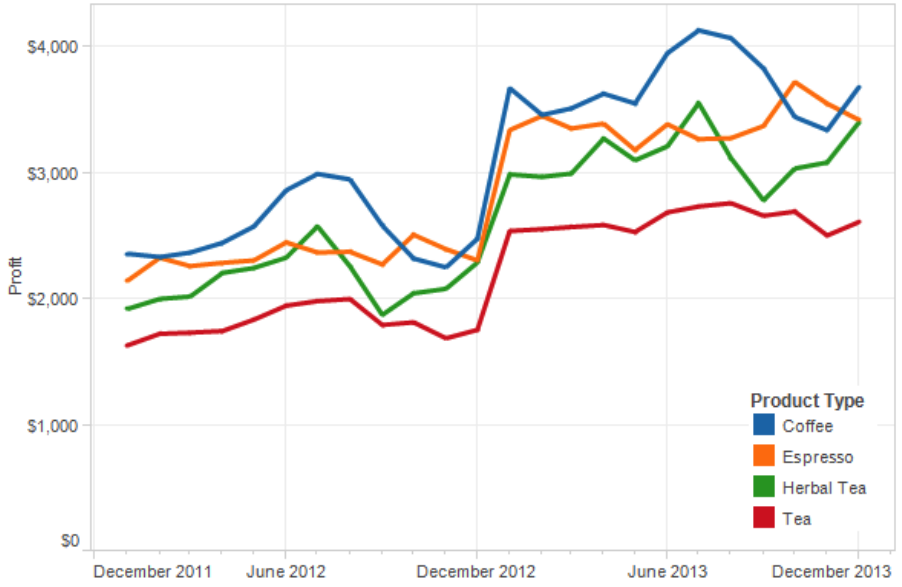
- Basis Statistics
- Pie Chart
- Bar chart
- Box Plot
- Histogram
- Bar stacked
- Scatter Plot
- Bubble Representation

Proposed Visualization Patterns









Future Scope

The project itself holds an excellent prospective future scope when it comes to providing Students & Teachers alike with a learning experience of the teachings of Data science. It can include different types of predicting models which many current industry professionals utilize in order to make critical decisions for business and communities alike. Hence, including such learning opportunities would be very fruitful for the end goal of the product itself which is to promote the teachings of Data Science to prospective Australian Students & Teachers.

Team Members

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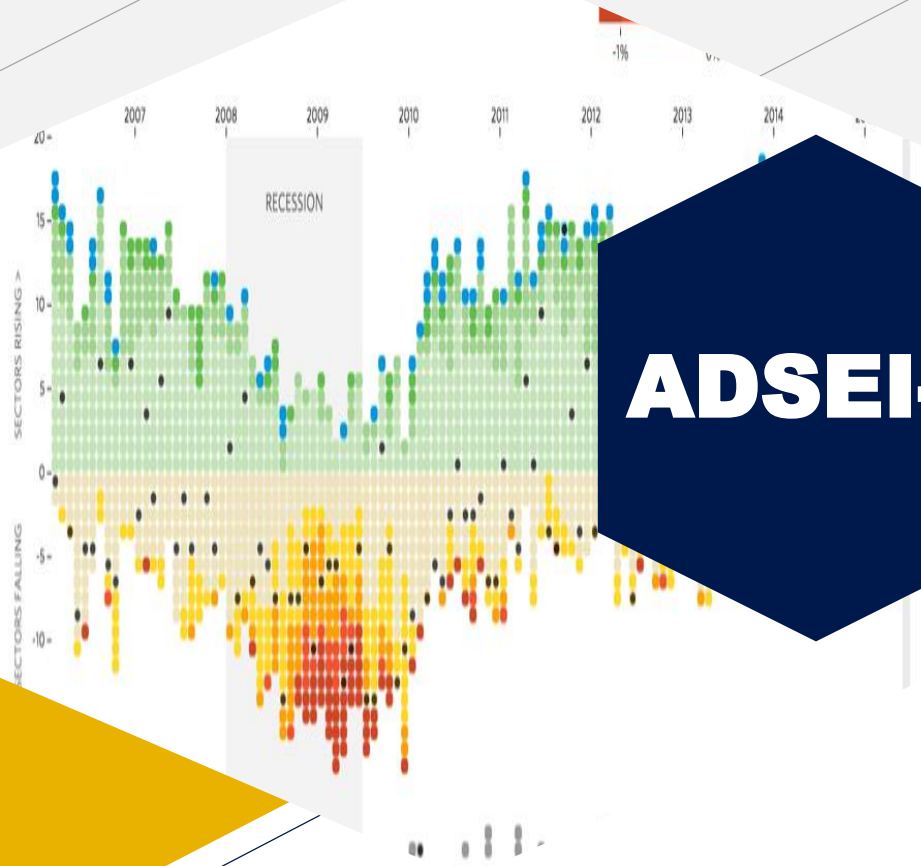

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Thank You.