**PROJECT 3 – TEAM 4 PROPOSAL DOCUMENT**

**Project name:** [eBird-Data-Visualisation](https://github.com/SriPenumatcha/eBird-Data-Visualisation)

**Track:** Data Visualisation

**Team members:** Lindsay McCulloch, Ned Zaatari, Sri Penumatcha, Vrinda Patel, Yashada Kulkarni

**Repository:** <https://github.com/SriPenumatcha/eBird-Data-Visualisation>

**Project description:**

The aim of this project is to provide user driven data visualizations of bird sightings in Australia using the Ebird API.

**Datasets to be used:**

* <https://ebird.org/data/download>
* <https://developers.google.com/maps/documentation/geolocation/overview>

**Key enquiry:**

What’s happening with bird biodiversity in Australia?

* What patterns can we see between sightings of each species between specific time periods?
* Are the climate conditions in Australia affecting bird migration patterns and if so, how?
* Are there any links between the abundance of bird sightings and city developments in Australia?

**In the absence of historical data, we have decided to answer the following key questions:**

|  |  |
| --- | --- |
| State-wise, which locations had max bird observations? | Drop down menu and markers with Australia map |
| State-wise “notable” observations of birds | A list that appears for the selected state |
| State-wise, 10 most commonly observed birds and their count | A bar chart that appears for the selected state |
| Total number of observations | Number displayed with large font on the dashboard |
| Top ten bird observations by suburb  Top 10 bird species observed  Number of birds observed per state |  |

**Visualizations (for historical data only, in case we get to work on migratory data):**

* Interactive drop down menus for each bird species and their frequency in sightings to then show data through a heatmap for each proposed time period

**How:** java script/HTML

* Map with hotspot markers in each state for most frequent locations for bird sightings - hover feature to show images of birds spotted at the hotspot sights

**How:** looping through JSON where maximum data points exist for species of interest/rare birds

* Charting migration patterns

**How:** Matplotlib, Pandas plotting, hvplot, JavaScript (Plotly)

**Additional resources:**

* <https://www.reddit.com/r/jquery/comments/11v89qx/how_do_i_use_hover_on_image_map_areas_to_show_a/>
* <https://docs.maptiler.com/sdk-js/examples/popup-on-hover/>
* <https://stackoverflow.com/questions/64296602/how-to-show-marker-location-in-map-when-mouse-over-to-a-div-item-like-airbnb>

**Requirements:**

* Your project must include visualizations. The visualizations can be created with:
  + Python (e.g. Matplotlib, Pandas plotting, hvplot) JavaScript (e.g. Plotly or Leaflet)
  + A Python or JavaScript visualization library that was not covered in class
  + Data must be stored in and extracted from at least one database (PostgreSQL, MongoDB, SQLite, etc).
  + Your project must include at least one JavaScript OR Python library that we did not cover.
  + Your project must be powered by a dataset with at least 100 records.
  + Your project must include some level of user-driven interaction, such as
  + HTML menus, dropdowns, and/or textboxes to display JavaScript-powered visualizations
  + Flask backend with interactive API routes that serve back Python or JavaScript created plots
  + Visualizations created from user-selected filtered data, which could be powered byJavaScript libraries Python in Jupyter Notebook
  + Command-line Python scripts that save visualizations locally

***Remember:*** *You have learned how to filter data in Pandas, JavaScript, SQL, SQLAlchemy, and MongoDB.*

* If possible, your final visualization should ideally include at least three views.
* Your GitHub repo must include a README.md with an outline of the project including:
* An overview of the project and its purpose
* Instructions on how to use and interact with the project
* At least one paragraph summarizing efforts for ethical considerations made in the project
* References for the data source(s)
* References for any code used that is not your own