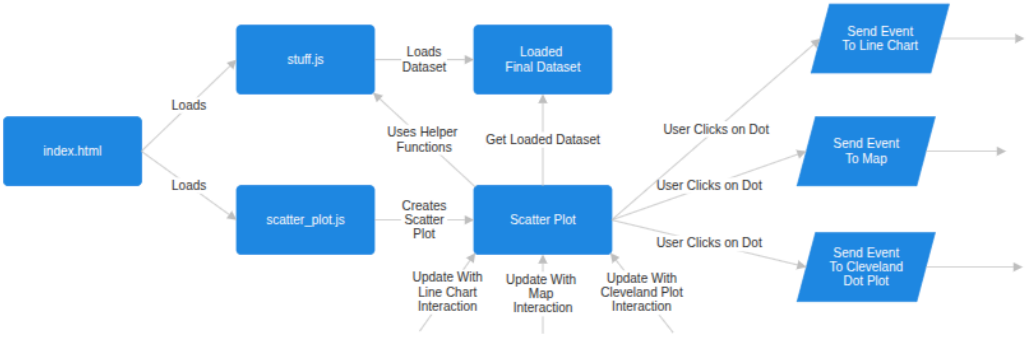
Checkpoint V: Third Prototype

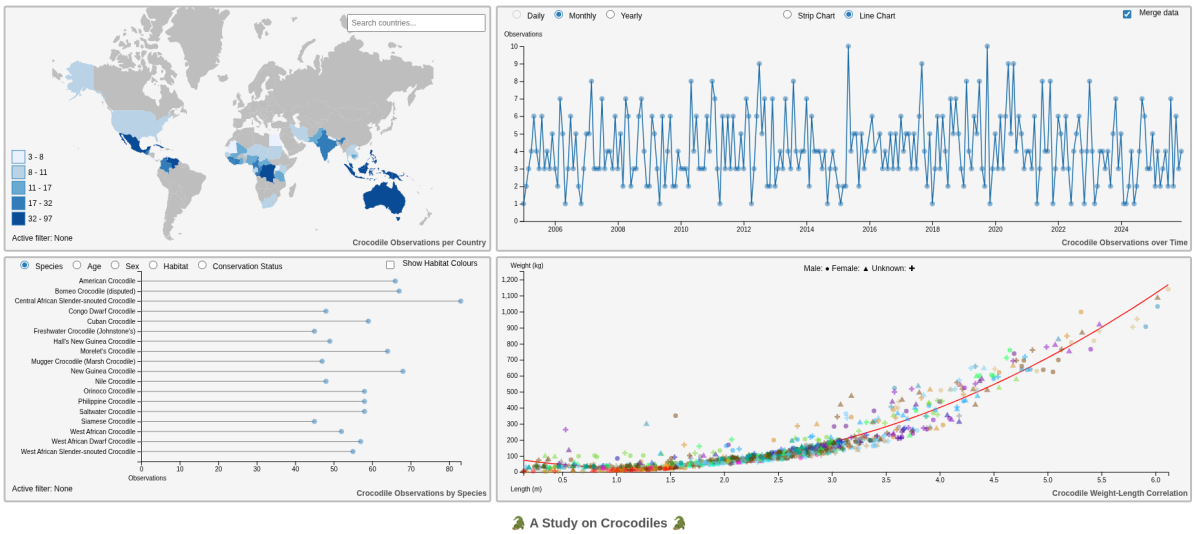
Group: 34
Date: 2025/10/12

Prototype Architecture



The Scatter Plot still works and interacts the same exact way as the previously described idioms do, and this report acts as a continuation of the previous reports, showing only the deltas. There is one new module, the Scatter Plot, and it is our final idiom. It sources the data and auxiliary functions from stuff.js and sends events to other idioms to send data their way, receiving events from others as well.

Dashboard Layout



This version of the Dashboard presents a few changes from the one presented in CPIV. The easiest changes to notice are that both the Dashboard and each individual idiom have titles so that the user knows what it is they are looking at, and all the widget colours have now been standardized. The other changes are more subtle and pertain to the individual idioms: the map's country-list dropdown is now fully searchable, making it easier for the user to find the country they want; the Line Chart now includes a Strip Chart option, removing the lines and allowing the user to possibly find patterns in the dots more easily; and the Scatter Plot no longer includes a tabbed legend-box, instead opting for a legend at the top for the sexes, a hoverable legend tooltip for each item, and interaction with

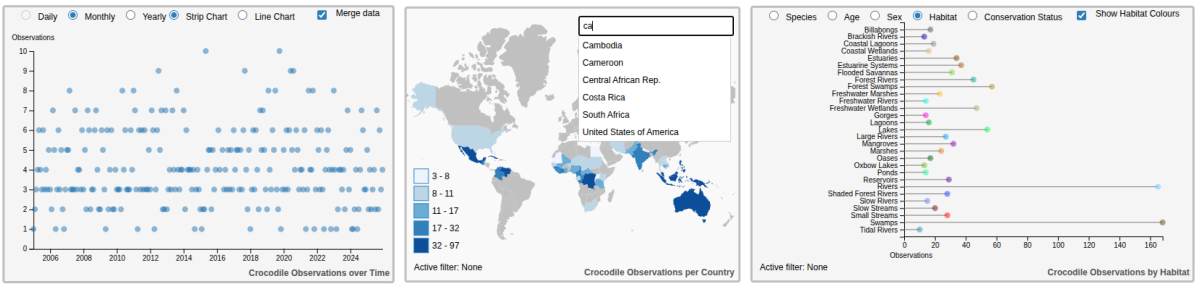
the Cleveland Plot Chart to show the habitat colours. This last part was changed for several reasons: the number of habitats is too large and would make the legend unreadably cluttered; our project consistently uses tooltips for providing the user with information; and since the tooltips rely on memory, we provide the option to show the habitat legend on the Cleveland Plot via its dot colours. Because the Cleveland Plot option relies on the user deviating their attention and the tooltips rely on the user's memory, we considered that having only one of these options would be bad, but having both options together would have them make up for each other's flaws.

Data Processing

There is new data processing done in dataStuff.py for preparing the dataset: we turn the "length" attribute into "lengthM" so that we don't get confused with javascript's "length" function. The only other new data processing done is in the regression line, where we found out that it is polynomial, and therefore we needed to process the (lengthM, weight) via Gauss Elimination to create the quadratic equation that would lead to the regression line. Other than that, there doesn't need to be new data processing as we're just plotting the dots as (lengthM, weight) on the chart.

Chart Interaction

There are a few new interactions done: the country-list dropdown is now searchable, where the user can type the country's name, and it'll filter the dropdown, this has been a recommendation since CPIII, and it is finally implemented; the Line Chart idiom now includes an option to only show the dots (Strip Chart), making it easier for the user to possibly notice patterns; and the Cleveland Dot Plot has an option for showing the habitat colours as the dot colours in the habitat section, making it easier to understand the Scatter Plot:



There are interactions in the Scatter Plot itself too: the user can hover over a dot/item to be shown the species name, sex, habitat, length and weight; the user can hover over the regression line to show its R^2, its type (quadratic) and its formula ($y = a + bx + cx^2$); finally the user can hover over the legend for the sexes at the top to be informed that habitat colours can be shown in the Cleveland Dot Plot. In the integration section, we explain the clicking and brushing interactions.

Chart Integration

The chart is fully integrated with other idioms where filtering by a value in the Cleveland Dot Plot will filter the Scatter Plot to show said value; selecting countries on the map will filter the Scatter Plot to only show data about those countries; and brushing for a selected time period in the Line Chart will make the Scatter Plot show data for that period. It is possible to click on a dot/item on the Scatter Plot, making it filter itself and all other charts to show information about the clicked species. It is also possible to brush an X area on the Scatter Plot to filter the data of every chart by the selected lengths: