

## Milestone 2: Project of Data Visualization - Datatouille

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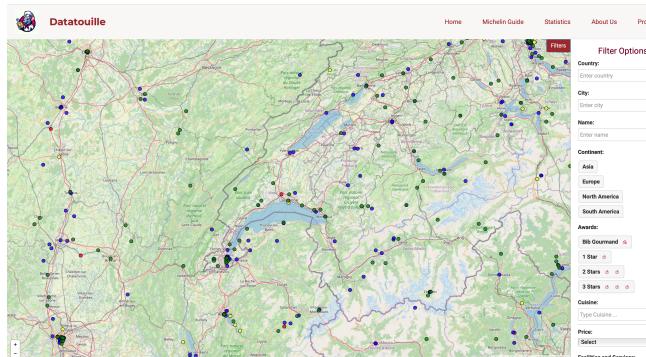
## 1 Introduction

Our project aims to help gourmet people around the world to efficiently search and select the Michelin starred Restaurants based on their various criteria such as location, stars, price, cuisine, facilities and services via an interactive map. Our end goal is not only displaying these restaurants, but also including closest Michelin restaurants to a selected location and routes that feature the selected restaurants world-wide. Hence creating a valuable resource for food enthusiasts like us who seek personalized dining experiences and arrange their destinations accordingly.

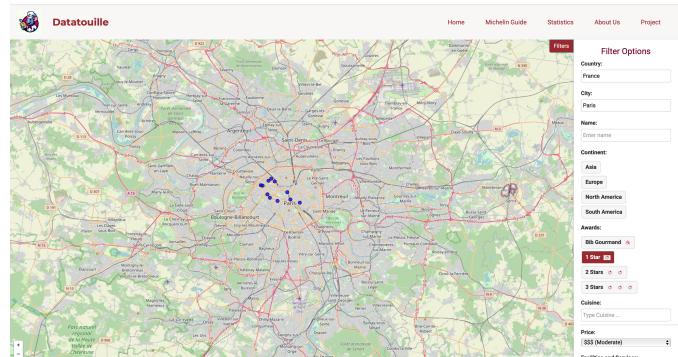
## 2 Visualizations

### 2.1 Homepage Map

On the homepage, as shown in Figure 1a, users encounter an interactive map pinpointing Michelin restaurants worldwide. Color-coded dots represent the award status of each restaurant, offering a visual guide to the distribution of Michelin Awards. The sidebar, depicted in Figure 1b, allows users to filter the map view by various criteria such as country, city, continent, and Michelin award categories. Additional filters for cuisine type, price range, and facilities refine the search further. When filters like 'France', 'Paris', '1 Star', and '\$\$\$' are applied, the map displays a focused cluster of restaurants meeting those conditions. The homepage is thus designed to help users navigate the Michelin dining scene, providing a geographic visualization complemented by detailed search capabilities to find restaurants that align with their preferences. Moving forward, we aim to enhance the functionality of our filters and enrich the content available by integrating reviews by leveraging the Google Places API in order to provide valuable insights to users.



(a) Map View - General



(b) Map View - Some Applied Filters

Figure 1: Views of the Home Page

**Extra:** If time permits, we will implement the "Recommendation Mechanism" utilizing a map similar to the one on the homepage (Figure 1a). This feature will enable users to find Michelin-starred restaurants based on criteria such as city, radius, and budget. The map will dynamically display restaurants that meet these parameters with color-coded markers to indicate price level or star rating, enhancing data interpretation

at a glance. For users seeking multiple recommendations, the system will plot routes connecting these restaurants, illustrating a clear and efficient travel path. This interactive route visualization will not only simplify navigation but also enrich the user interaction, translating complex data sets into an intuitive visual representation that facilitates decision-making and enhances the overall user experience.

## 2.2 Location-based Statistics

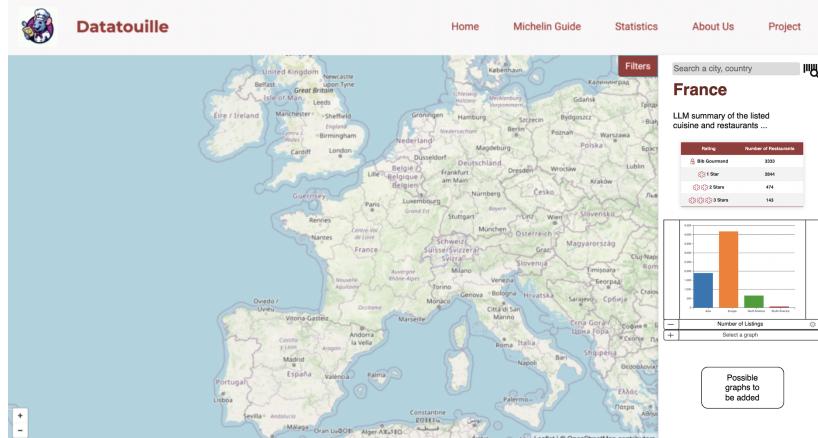


Figure 2: Mockup for the Statistics Page

**Core:** Our initial implementation includes a statistics page featuring several plots, yet we plan to enhance its functionality. Our primary objective is to introduce an interactive map, allowing users to click on countries and cities to access various statistics for each location. Additionally, we intend to integrate various bar charts and tables showcasing cuisine types, Michelin star counts, and other relevant data points. Mockup design for the final statistics page is presented in Figure 2.

**Extra:** Depending on the time left, we will also try to implement dynamic plot generation, allowing users to request and generate plots based on their specific preferences. Furthermore, we aim to introduce more sophisticated visualizations, such as review word clouds and heatmaps displaying restaurant intensities across the global map. These enhancements will enrich the user experience and provide deeper insights into the data.

## 3 Tools

Here are the main tools that are been used within the scope of this project:

- **Data Visualization:** D3.js is a powerful JavaScript library which we use in order to pin the Michelin Restaurants locations on the world map.
- **Website:** Flask was used as a framework in order to build the website which has been developed via HTML/CSS and Javascript, and hosted on GitHub pages.
- **Maps:** Leaflet is an open-source JavaScript library to display interactive maps and has been used for generating a customized map to show the Michelin restaurants.
- **Data exploration:** Python, Pandas and Plotly was used during the exploratory data analysis (EDA) phase to manipulate the data and create interactive graphs.

Since our main goal is to display an engaging map via D3 and Leaflet, lecture 8 will be extensively used. Because the website is developed with Javascript lectures 2-4 will be useful. In order to achieve a user-friendly look on visualizations lectures 6 and 7 will be followed. For the country based view Lecture 9 can be used to display the textual data of the most popular restaurants, cuisines and locations to the screen. Lecture 12 will be useful as a guideline to achieve a narrative visualization at the end.