

Milestone 2

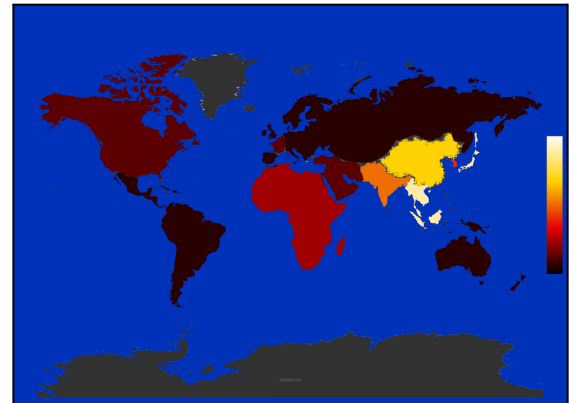
1. Ingredient-based visualization

The core feature of our project is a search bar located on the homepage of the website. Users can enter one or more ingredients they are interested in, which will dynamically influence all other sections of the website. Our [website skeleton](#) has its basic layout on the landing page. To make it functional, we need lectures on interaction, data and javascript.

Overall, our website is divided into 3 specific parts: Ingredients, Recipes, General Cuisine. Each part has a few subsections

1.1. Ingredients Across Countries

We will create an interactive world map that highlights countries based on how they use the selected ingredients. It will show the different statistics linked to the country like how many recipes use the ingredient, how many compound ingredients include it, etc. We also would like to add a heatmap feature to show which countries use the ingredients the most (normalized by total recipes from each country) like on the right:



To implement such visualization, the lecture on maps will be useful. For more details on how the visualization will look, please visit our website skeleton.

1.2. Ingredients Pairing

An interesting point for a cooking enthusiast is the ingredient pairings. To explore this, we want to make a visualization that uses some sort of dimensionality reduction to project our ingredients on a 2D mapping, where groups of ingredients frequently used together would be close to one another like on the left image below:



This visualization will be complemented by a horizontal bar plot that provides a clearer, quantitative view of the top co-occurring ingredients (see website skeleton).

As an example, we searched for basil and highlighted the 10 most commonly used ingredients with it. The size of each circle will represent how frequently the ingredient is used in the dataset, while the color will indicate how often it is paired with the selected ingredient (basil, in this example). We can distinguish 2 different clusters linked to Italian cuisine, one looks like it is related to pizza/pasta recipes, and the other to tomato sauce.

To implement this we would need the lecture on the Graphs, Mark, and Channel. Alternatively, a more complex implementation of this feature will be the circular graph found on our website skeleton.

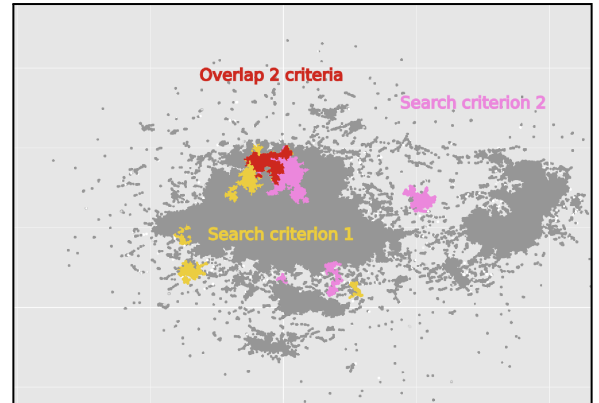
2. Recipe Search

We would like to create a recommendation system to find recipes that would interest the user, based on inputted ingredients, type of cuisine, or even dish name. The system will display 3-10 recipe recommendations that best match the chosen criteria. These recommendations will be randomly selected from the top results.

You can then refresh to get other recommendations from this list. A static version of this visualization is available on our website skeleton. To make this feature functional, we will need the lecture on interaction.

A more creative and complex idea could be to implement a graph that maps all recipes in a 2D space based on their ingredient composition (same approach as mapping in previous section). Recipes that share many ingredients will have high similarity scores and appear close to each other on the map, forming distinct clusters. Hovering over a data point would show the recipe name, region, and list of ingredients. This would allow a more intuitive exploration of the data set.

When searching by ingredient, cuisine type, or dish name, the graph would highlight only the matching recipes while graying out the others. When using several criteria, it could possibly highlight each criterion, and the data points where all criteria overlap as seen on the image on the right.

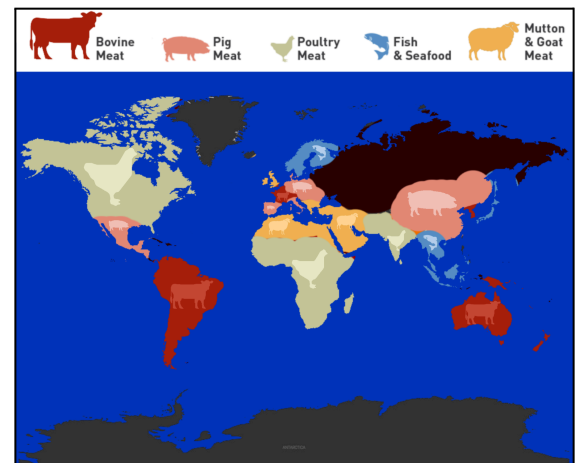


Another version of this implementation is visible on our website skeleton. In general, to create such visualization, we would need the lecture on the Graphs, Mark, and Channel.

3. General Cuisine World Map

As an alternative approach to our ingredient-focused recipe exploration, we figured that some users might be also interested in gaining a more global understanding of cultural differences in cuisine. To address this, a smaller section of our website will be dedicated to visualizing and comparing the unique characteristics of different cuisines globally.

We will build a world map similar to section 1.1, that displays, for example, the most commonly consumed type of meat in each world region (using hypothetical data in the example on the right).



Another thing we can highlight is the most commonly used types of vegetables in each region, fruit, etc. This could also include the proportion of meat vs vegetarian dishes for users who eat a plant-based diet, or maybe how many dessert recipes there are per region for users with more of a sweet tooth.

Additionally, we're considering adding information about the diversity of dishes and the average number of ingredients used in each region. Overall, this section will be a glimpse into the EDA we did in Milestone 1.

4. Other Comments

To give our site a more complete and interesting look, we're adding some realistic details. For instance, there is an "About Us" page so the readers can get to know the people who are working on the project, plus contact and social media links—which are actually those of EPFL official pages

We're also experimenting with some new ideas that would improve the user experience but are not critical to the core function of the project. One idea is an animated transition between sections based on ingredients selected to enhance it. Another idea is to offer filters by dietary needs (e.g., gluten-free or vegan) in the landing page, or even local recipe fun facts pop-ups as you scroll over different regions on the map. These would add depth and interactivity to the site but could be left out if time or technical feasibility is a concern.