

# A food web map: filtering dining hotspots



by ITAY SWID and BO-YUAN CHEN

This is a web map aiming to assist people who are struggling with where to find the dishes they want. The motivation arises from our personal experiences. When traveling to a new place, arranging a meeting in a restaurant, or just a craving for a specific type of food that emerges, we usually prefer getting to know the whole picture of the options we can have. However, the interactive maps accessible on the internet so far are not designed to decide on an area to go to, but more on a specific place. This is why the topic is interesting for us and worth diving into.

## WORKFLOW

The project was divided into two major sub-workflows:

- 1. data collection:** the coordinates of restaurants are from OSM and other information is from Google Maps and restaurant websites.
- 2. Symbology and web app design:** Initially created in ArcGIS, the dataset, accompanied by its symbology, was imported into ArcGIS Online to be used as a web service. Then, we proceeded to build an HTML file and used ESRI's JavaScript API to create an actual Web Application. We continued with symbology refining on ArcGIS Online, using pre-made SVGs we found online.

```
// data handling functions
function dishDataToListofUniqueValues(data) {
  let dishes = [];
  // data holds data from the entire dataset. cDish ca
  // if no dishes were specified for a feature.
  data.forEach(function (feature) {
    let cDish = feature.attributes[dish];
    if (cDish != null)
      cDish.split(',').forEach(function (dsh) {
        if (!dishes.includes(dsh)) dishes.push(c
      });
  });
  return dishes;
}

function addNewComboboxOption(container, text, value) {
  let opt = document.createElement("calcite-combobox-
  opt.setAttribute('value', value);
  opt.setAttribute('text-label', text);
  container.appendChild(opt);
  return opt;
}

// SQL query creation functions
function buildSQLQueryByComboboxElements(eList) {
  // Different relationship between Cuisins and Dishes
  let queries = {
    [cusns]: [],
    [dishes]: [],
  };
  eList.forEach(function (element) {
    queries[element.parentNode.label].push(element.v
  });
  // Between the same type we will expand the query, b
  // reduce the query when combining dishes an cuisins
  return mergeQueriesWithAnd(queries[cusns].join(' OR
```

Fig 2: Code sample on Visual Studio Code

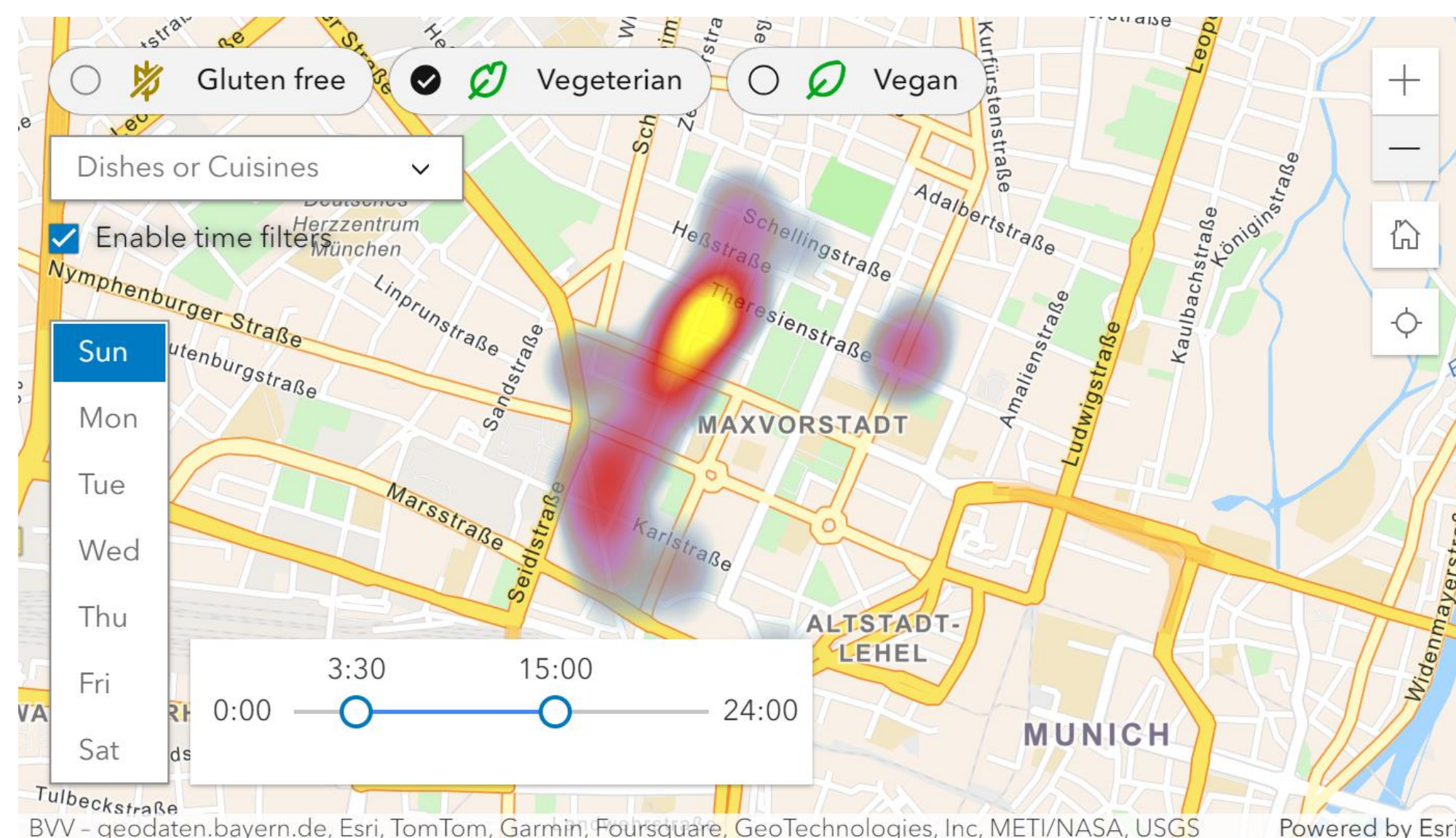


Fig 2. The web application in heatmap scale, with some filters enabled.

## FUNCTIONALITY

The final map highlights the following functions which users can easily learn and get used to:

- 1. Filtering of dishes and cuisines**
- 2. Opening hours filtering**
- 3. Diet filters**
- 4. Alternating Heat map and individual points visualization**
- 5. Pop up for detailed information and Google Maps reference**

First, the design of multi-filters allows users to search targets with enhanced customization, convenience, and efficiency. For example, a vegetarian who want to have sushi or pasta for a proper meal on Sunday might can select corresponding options to narrow down the targeted area.

Second, the visualization of heat map also assist users to identify where the target restaurants locate and to which direction shall take, by activating location service simultaneously. In addition, the symbology of different cuisine is applied for easy distinction.

Lastly, we created pop-up windows including further information about each restaurant. For instance, navigation to certain restaurant is also possible by simply clicking Google Map hyperlink embedded in the pop-up window.

## WHAT WE LEARNED

Obviously, we learned JavaScript to some degree because we also learned that perhaps most web applications are somehow based on it. We also got to know more about ArcGIS in detail, especially ArcGIS Online and its limitations – but also its capabilities.

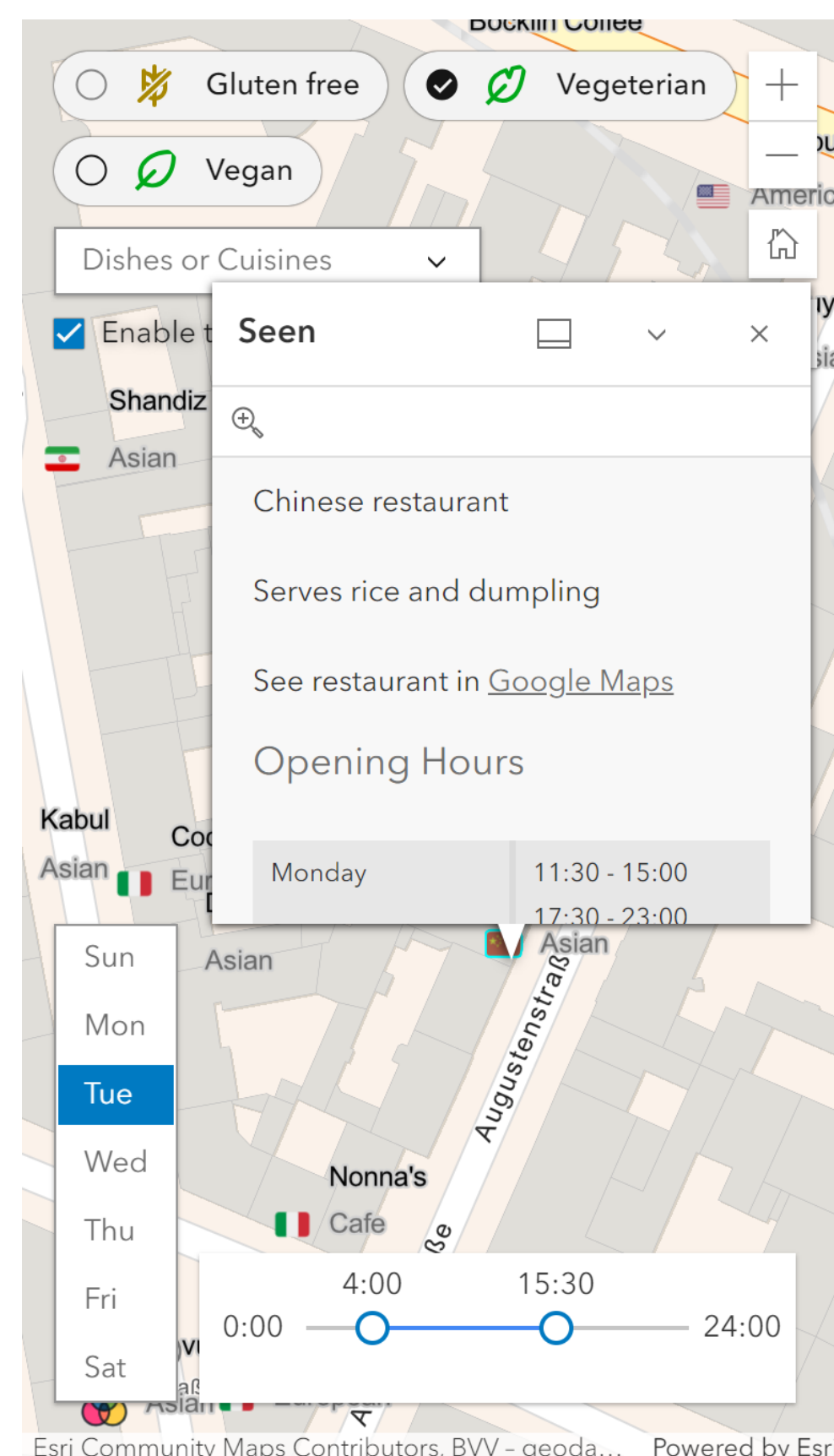


Fig 3. The web application in mobile view with a popup

## IMPRINT

Mapping Project  
Winter Semester 2023/2024  
Technical University of Munich

Itay Swid  
Bo-Yuan Chen

## SUPERVISOR

Juliane Cron, M.Sc.  
Chair of Cartography and Visual Analytics

## KEYWORDS

Food, web map, heat map, filter, Munich, restaurant

## LINK

[itayswid.github.io](https://itayswid.github.io)



## REFERENCES

- [1] Google. (n.d.). [Google Maps filtered by restaurants in Munich]. Retrieved November 1, 2023 to January 31, 2024, from <https://www.google.com/maps/>
- [2] "Map data copyrighted OpenStreetMap contributors and available from <https://www.openstreetmap.org>