PARIS LODRON UNIVERSITÄT SALZBURG

ZGIS

Paris Londron University Salzburg

Strava web-based dashboard for spatial & performance analysis of physical activities

Application Development
Nicole Salazar
12414039

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Table of Contents

State-of-the-Art

Modern web dashboards are widely used for the visualization of real-time data coming from different sources. Some of the best-known examples are Strava dashboards, Looker Studio from Google, and custom fitness monitoring programs, allowing people to monitor activities, frequency, and progress. These types of dashboards have a tendency to integrate APIs, interactive charts, and responsive design to give enhanced user experience. However, the majority of these solutions require paid subscriptions or are not highly customizable for use by individuals.

Problem Statement

Users generally struggle to graph and track personal activity data efficiently. Existing platforms do one or more of the following:

- Limit the kind of data graphed
- No always a spatial visualization available
- Do not support personal customization
- Provide complex interfaces that are not simple enough for new users

There is a need for lightweight, easy-to-use, and customizable dashboard to plot personal or fitness-based information inside a web browser.

Objective

To develop a personal web dashboard that combines multiple data sources (e.g., fitness tracking applications) and provides insights in an interactive and user-friendly way.

Research Question

How to develop a lightweight, user-friendly and easily customizable dashboard with informative visualizations of personal data?

Method

1. Project Structure:
   - HTML for the overall framework (index.html)
   - CSS for layout and styling (style.css)
   - JavaScript for data management and interactivity (script.js)

2. Data Handling:
   - Export data manually from the fitness webpage, in this case Strava, or APIs
   - Process the data in JavaScript to generate summaries and statistics

3. Visualization:
   - Display a map and an interactive graph with HTML/CSS
   - Include interactive controls like buttons and toggles to refresh and filter data
   - Make it responsive for different devices

4. Testing:
   - Test dashboard on numerous browsers
   - Make sure images, logos, and charts appear as intended

Results

Final dashboard includes:

- Interactive visualizations: Map with a polyline layer and a heatmap of frequency of activity and an interactive graph that display relevant activity data.
- Filtering and interactivity: The graph is responsive to the maps bbox, and both features, the graph and map, are responsive to the filter per activity.
- Personal branding: personal logo and Strava logo.
- Demo visualization: GIF of dashboard usability and functionality.
- Responsive design: Compatibility for desktop and mobile screens.

Problem Solution

The project solves the problem well in the first instance by providing an easy, visual, and customizable web dashboard that allows one to track personal information efficiently without resorting to third-party paid websites.

Appendix

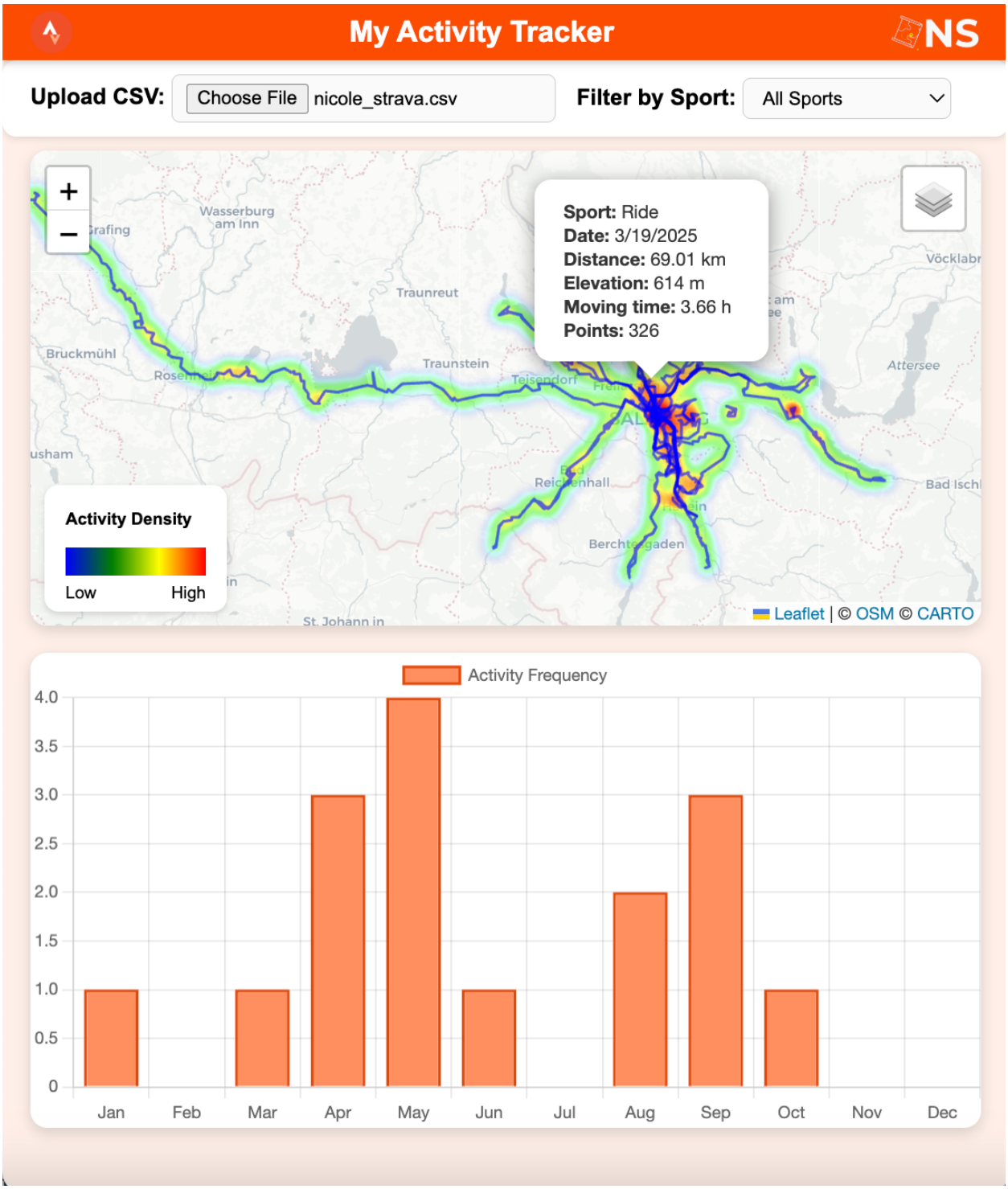

Figure 1. Dashboard Overview in a tablet view