Temporal Navigation for Festival Maps on Mobile Devices

Dilara Bozkurt [a],*

[a] University of Twente, the Netherlands – dlara.bozkurt@gmail.com

* Corresponding author

Abstract:

In today's information-driven world, maps have become tools for conveying important spatio-temporal data across various domains, such as weather forecasts, traffic conditions, and flight schedules. However, maps have greater potential to be more integral parts of our lives by being primary sources of spatio-temporal information. Some important reasons why they have yet to fully realize this capacity are interaction challenges on mobile maps and insufficient emphasis on the temporal aspect of spatial data on maps.

Mobile maps double the usage of non-mobile ones (Lella & Lipsman, 2014, as cited in Ricker & Roth., 2018), and interaction distinctly sets mobile maps apart from non-mobile use cases (Shneiderman & Plaisant, 2020, as cited in Roth et al., 2024). Temporal navigation is an interaction tool that often lacks improvement due to the common neglect of the temporal aspect in spatial data. The lack of temporal aspect and weak map interaction necessitates repeated switching between websites and mobile maps, which disrupts the user's flow and diminishes overall satisfaction. Due to the complexity of time, conventional time filters and map symbologies lack the flexibility needed to accommodate diverse temporal patterns, hindering users' ability to effectively explore spatial data and plan their activities accordingly. Time is organized hierarchically with different granularities such as seconds, minutes, and years, following various calendar systems. Analyzing temporal data involves assessing time points and intervals, where data values are valid either immediately or over specific time spans (Adrienko et al., 2010). The organization of time into linear, cyclic, branching, and multiple-perspective structures is crucial for understanding events, planning scenarios, and incorporating diverse viewpoints (Adrienko et al., 2010).

The thesis attempts to discover possible design alternatives of temporal navigation interfaces for the discovery of spatio-temporal data with high time granularity on mobile screens and evaluate the level of user experience they can provide. Utilizing temporal navigation and integrating time into maps can help users quickly decide where to go and when in event spaces. This can prevent users from frequently switching interfaces, leading to a smoother experience. Moreover, the approach can help users see the intertwined nature of time and space on the map.

The research focuses on using the Glastonbury Festival 2024 lineup dataset as a case study. This dataset offers valuable insights into designing interactive spatio-temporal interfaces. The dataset was selected due to the significant demand for spatio-temporal information during the event and the researcher's personal interest. The dataset's inclusion of both dates and times makes it suitable for developing temporal navigation interfaces with dual-dimension on the map.
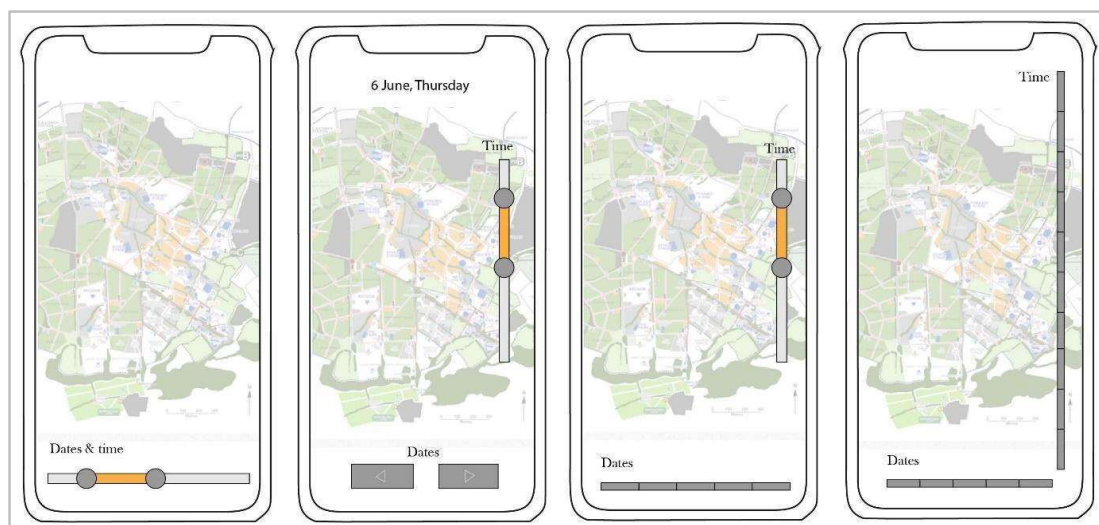
Figure 1: Imaginary temporal navigation alternatives aimed at conveying an idea about the thesis topic.

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