Team Name: The Documenters 🔍
Project Name: Spatio-Temporal Immersive Visualization of News Events
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Introduction

The purpose of our project is to provide a more engaging and immersive method of keeping up with current news events. It would provide users a convenient way to find relevant news stories, and the history and context behind those events. It will leverage a map based interface with large language models to provide further insights into the events. The user will be shown a map full of news hotspots and they can select a respective hotspot to find out what is going on. They can then be provided with a timeline of past events related to the current news story and dive further into the "rabbit hole" of connected historical events.

Problem Significance

Our project tackles the problem of keeping up with the magnitude of news events in today's global reach of reporting and technology. Current news consumption can be overwhelming, passive, and unengaging by reading long articles and often incorrect through social media. Having an immersive visualization of news events can help a wide audience of people gain a deeper understanding of global news events and educate them simultaneously. Additionally, creating this on a web-platform will allow a wider audience to use the visualization as not everyone has access to a virtual-reality headset. Ease of access will also allow it to serve as a centralized news source where people can obtain information on specific areas worldwide.

Current Solutions

There are typical community-based websites, like Reddit, which depends on the entire community to spread global news. Also, there are websites such as US Livcmap that do a similar topic of depicting news graphically but we aim to distinguish ourselves from them by creating a website that is not only more visually appealing, but also breaks down the news into readable, almost social media like posts, which would aim to inform in a way that is easily digestible. On top of this, we want to incorporate a chatbot and a timeline feature so that any question can be answered instantly and a user can look back in time to see what might have caused a certain news event. With this project, we aim to be an almost "one stop shop" for any news related

queries. We aim to provide news in an unbiased manner by leveraging AI/ML, but to also provide an accessible, immersive, and interactive experience that encourages readers to be up to date with global news.

Project Outcomes

We will create an interactive map (starting with the United States and expanding to more countries if time permits) that acts like a news hub displaying news happening across a region. It does this by displaying heat maps over areas with high news volume and upon clicking those points, it breaks down current events into bite sized and readable posts on the right side of the screen in an almost Pinterest board like fashion. From there, the user can ask questions via a chatbot which will elaborate further on that event / similar ones. Finally, the user will be able to see a tree-like diagram for events that have history dating back to earlier so they can see in detail what might have led up to a current event happening.

Initial Project Milestones

- Understand the potential of web-based environments.
    - We want to spend the first weeks learning new tech stacks and understanding and playing around with APIs that could potentially be helpful for a final project.
- Design the user interface and experience, considering mobile and desktop access and create mockups or wireframes detailing the user journey and key interactive components.
    - We have worked on creating a high level mock up and will want to take a couple weeks to a month for designing and coding the UI for a website in detail
- Begin initial setup of the backend infrastructure for handling and processing data
    - A week or two in case we need to learn new technologies and another week for implementation
- Implement NLP models for initial testing, including content extraction, summarization, and translation.
    - Two weeks for learning about NLP models and choosing which ones to best use and another week for implementation
- Integrate GPT-4 for chatbot functionality and test basic conversational capabilities.
    - One week for learning how to use GPT-4 as a chatbot and another to implement
- Combine all individual components to create a working prototype of the platform.
    - One week to combine
- Conduct internal testing to identify bugs and areas for improvement.
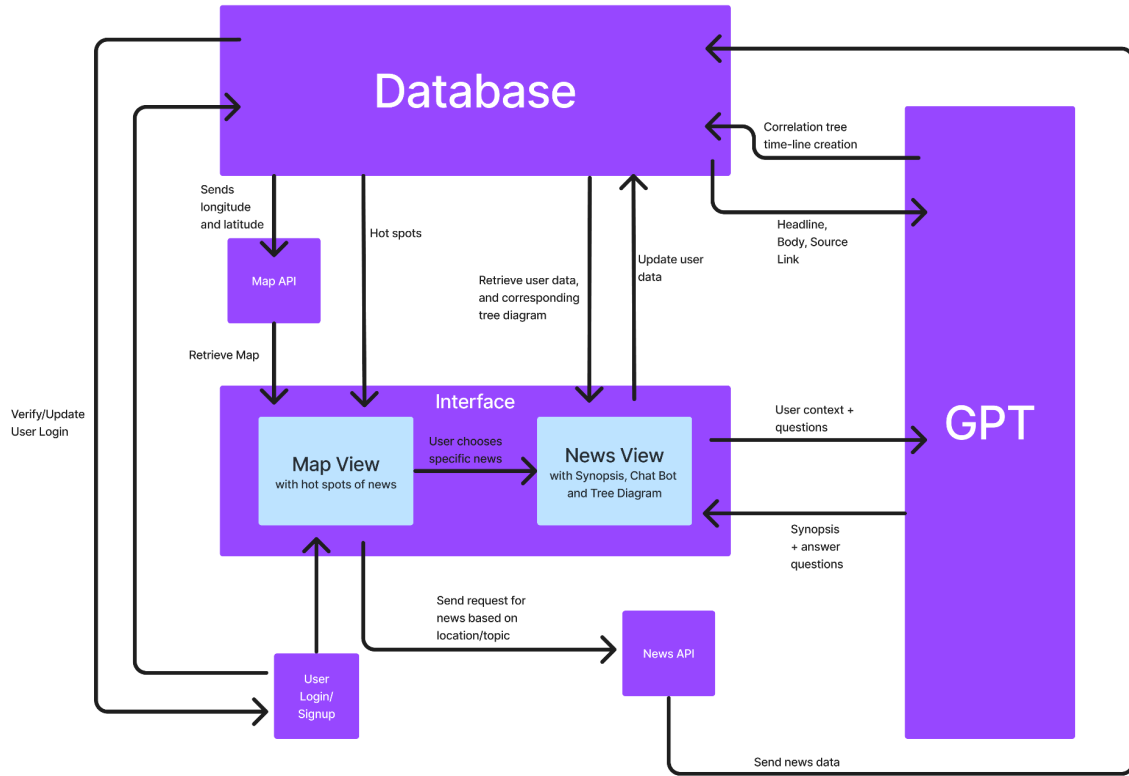   - One week

Team Goals

- User friendly and accessible for all age groups
- Visually appealing and engaging application where users can learn more about their events they are interested in

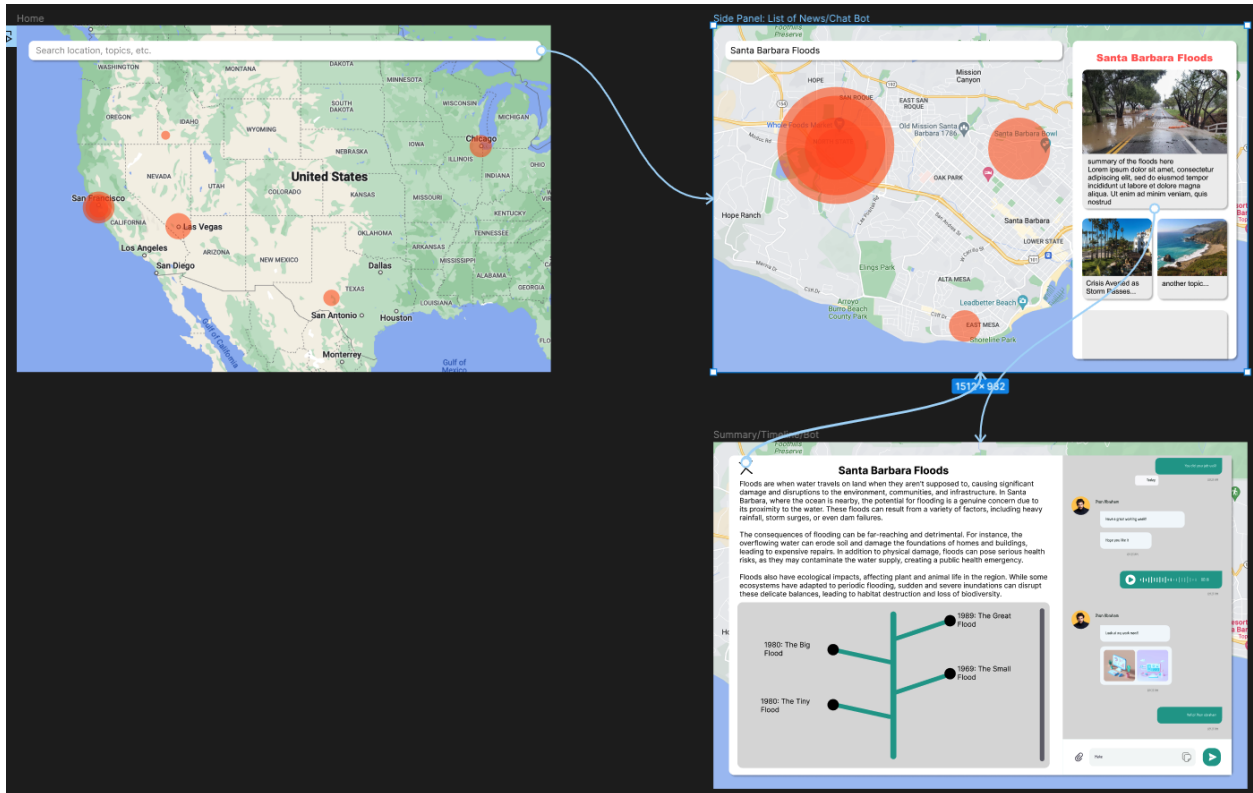- Seamless integration of various APIs (ChatGPT, News, etc.)

Team Assumptions
- Users have access to a phone or computer, and Internet to interact with our service
- Applications must be able to identify news hotspots (outside major cities and news hubs) and aggregate information
- User is looking for an easy way to understand news events
- User is curious about news events and looking to gain a deeper understanding of historical context

Architecture Diagram

Database

Sends longitude and latitude

Hot spots

Correlation tree time-line creation

Headline, Body, Source Link

Update user data

Retrieve user data, and corresponding tree diagram

Map API

Retrieve Map

Verify/Update User Login

Interface

Map View with hot spots of news

User chooses specific news

News View with Synopsis, Chat Bot and Tree Diagram

GPT

User context + questions

Synopsis + answer questions

Send request for news based on location/topic

News API

User Login/ Signup

Send news data

User Interaction and Design

[Figma link](#)

User Stories ([GitHub Repo](#))
1. As a new user, I can create an account (Google can be used for simplicity) so that my user data can be stored.
   a. Acceptance Criteria: There is a button to log in or create an account. Google OAuth can be used if users want to create an account with Google. This should also create an entry into the database to store the user's data.
   b. Expand to store search history
2. As an API, I can parse through a database of news events in such a way that it satisfies the user's search query.
   a. Acceptance Criteria: Back-end is able to provide relevant events/news related to the user's query
3. As an AI model, I can categorize and filter news.
   a. Acceptance Criteria: Users can use a search bar to filter news by categories (i.e wars, health, finance, etc.)
4. As a user, I can search for current news events so that I can learn about its history.
   a. Acceptance Criteria: There is a functional page (or side panel) with a search bar.
5. As a user, I can scroll along a map so that I can visualize the world.
   a. Acceptance Criteria: When the user enters the application, they should see a map and be able to scroll to view a world map.
6. As a user, I can easily visualize important hotspots around the United States in order to be up to date with the news.
   a. Acceptance Criteria: When the user enters the applications, they should see a map with pins that represent important areas of news on that day. User's should be able to click on that pin to view a list of articles relevant to that area.
7. As a new user, I can easily search for a location on a map of America to find news about events going on in the past or present at that location.
   a. Acceptance Criteria: On the main home page there will be a search bar at the top above the map where users can type an input into.
8. As a new user, I can ask a question box any clarifying questions about the news article that is currently being displayed.
   a. Acceptance criteria: For every news article summary there will be a question box if clicked that users can type an input into.
9. As an API, I can query a chatbot to give results on a question or any input.
   a. Acceptance Criteria: We can query the chatbot with specific background context related to the user's interests.
10. As a person interested in some current conflict, I can learn more about the news in a consolidated and bite sized way by using the NLP bot that summarizes different news stories so that I become more educated on current events and form opinions based on those facts.

a. Acceptance Criteria: A couple paragraphs of text summarizing a current event topic populates when the user types about or filters into a certain current event. This will show up above the Pinterest-like board.

11. As a person interested in visually seeing current events, I can analyze a pinterest board type placement of news sources.
    a. Acceptance Criteria: When a user clicks on a button or something is searched, a pinterest board type graphic is generated to display relevant information.

12. As an AI model, I can find correlation between different news
    a. Acceptance Criteria: Create a tree/graph of events where nodes are news and edges resemble correlation between nodes.

13. As a user, I want to be able to visualize the history of a certain news event.
    a. Acceptance criteria: Next to the selected news article, an interactive tree would appear that connects correlating news events.

Appendices
- Technologies to be employed
    - GPT4
    - Geospatial API
    - News API
    - Social Media APIs
- App Development
    - React Native
- Database Storage
    - AWS
- Deployment
    - Heroku to deploy to web