

Analysis Of US Accidents Dataset

Phase 2

Group 18

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1 E-R Description

Our E-R model can clearly show the structure of the whole database system.

A user has a unique ID and password.

Users can search for the accidents and get analysis.

The accident has a unique ID and distance and each accident has a report, the report contains a unique R_ID,description,source and severity of this accident.

Time has a unique ID and the start_time and the time zone to record the happen time of the accident.

The weather includes a unique ID,temperature,visibility,humidity and precipitation to record the weather condition when the accident happen.

An address include a unique ID,city,state,country,zip code and a composite attribute street which have the street number and street name so that it can clearly record the happened address of the accident.

The accident also indicate that whether has the POI annotation or not.The POI annotation contains the ID,no_exit sign,railway sign,roundabout,station,stop,junction,give_way,crossing,bump,amenity,traffic_calming,traffic_signal and turning_loop.

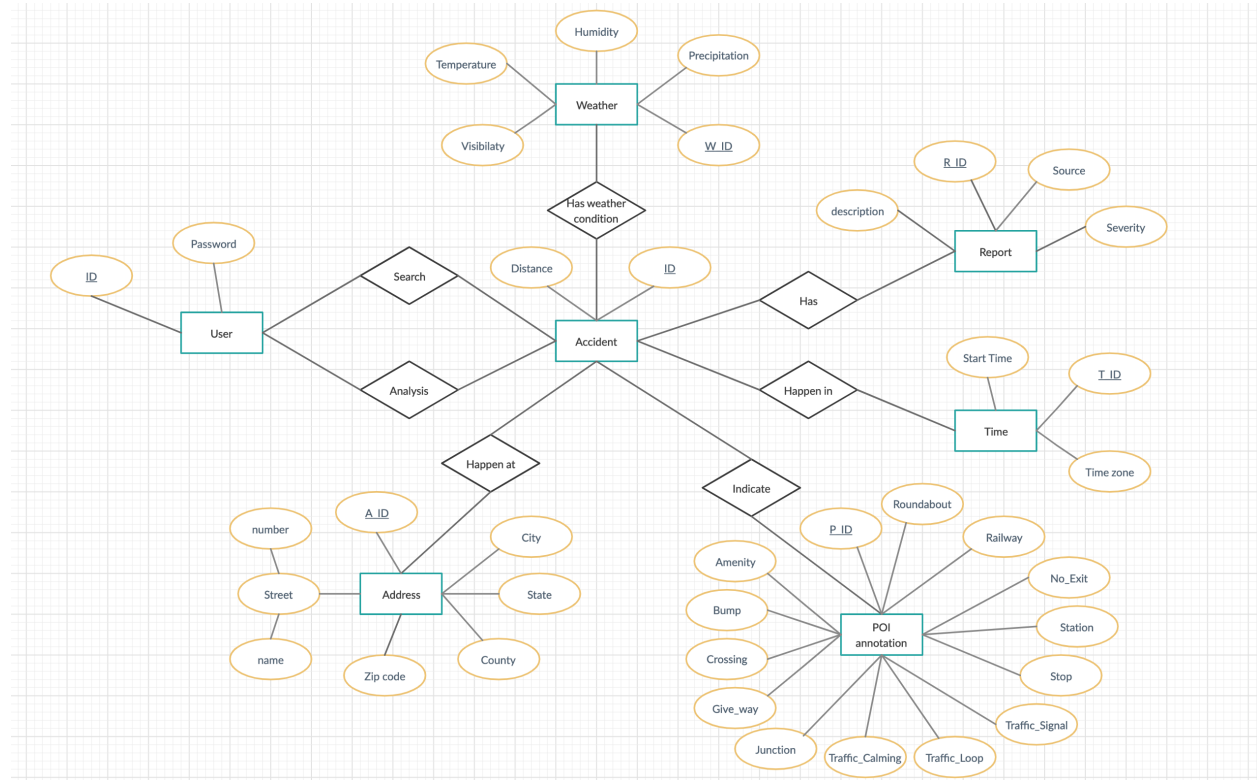


Figure 1 Design Schema

2 User Interface Design

2.1 Overview

The whole UI design is about two parts, Sign up & Sign in and Functionalities. After signing up and in, users are navigated to the homepage. In the homepage, buttons are named after corresponding functionalities. Users click on buttons to utilize functionalities they need.

2.2 Sign up and Sign in

This system has only one type of member: Users. Users can use the system to query data. User functions are as follows:

(1) Users need to log into the system to view the information from the database. However, during the first time, user should register first.

(2) Users could get information about the relationship between the number of car accident or severity and the outer condition.

(3) Users could view the detail information of specific car accident.

(4) Users can have an intuitive image of the data through visual charts.

The image is a hand-drawn sketch of a web page titled "Sign up". The page is enclosed in a rectangular border. At the top center, the text "Sign up" is written in a casual, handwritten font. Below this title, there are three horizontal input fields, each with a label inside: "email", "Username", and "Password". These labels are also in a handwritten style. At the bottom right of the page, there is a dark rectangular button with the text "Sign in" written on it in a white, handwritten font.

Figure 2.2 Sign Up Page

2.3 Functionalities

2.3.1 Homepage Module

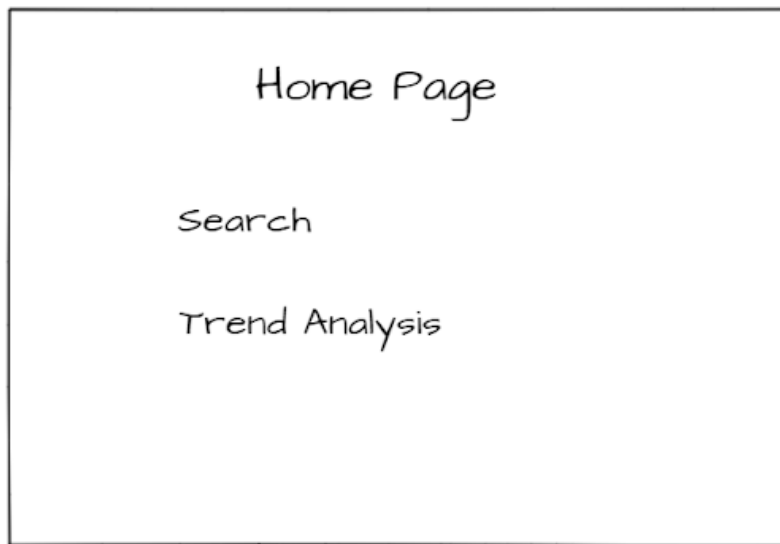


Figure 2.3.1 Home Page

Home page shows 2 main modules of our application. “Search” module associates to the function of data search. “Trend Analysis” module visualizes data to show how different factors influence traffic accidents.

2.3.2 Search Module

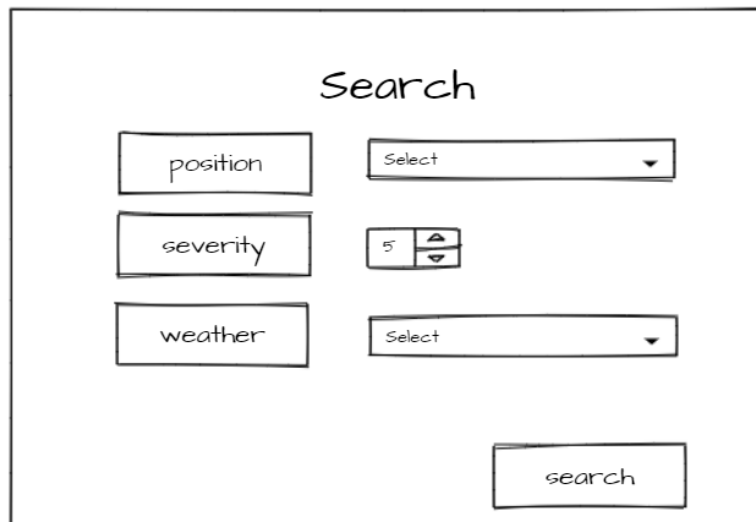


Figure 2.3.2 Search Page

“Search” page is designed for users to retrieve records in the database. Users can also use filters to get only the data they need. Hitting the search button, this page turns into “search result” page, where records are displayed in a table.

Search result		
<input type="checkbox"/>
<input checked="" type="checkbox"/> , ...
<input type="checkbox"/> , ...
<input checked="" type="checkbox"/>

Figure 2.3.3 Search Result

2.3.3 Functionalities Module

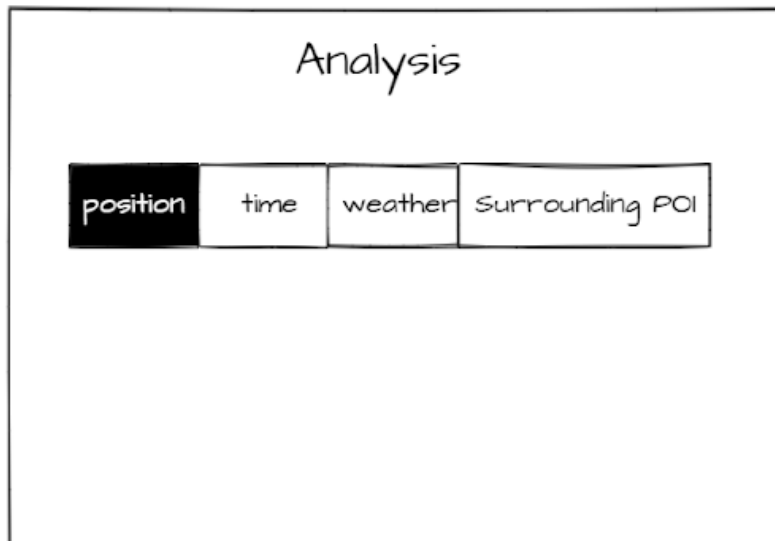


Figure 2.3.4 Analysis Page

Buttons on this page represent four main types of factors relative to traffic accidents. Users click on a button to do corresponding analysis. For each type of factors, appropriate visualization (such as scatter plot, line chart, and etc.) are generated to show the trends. Interactions (such as filtering) will also be supported when necessary.

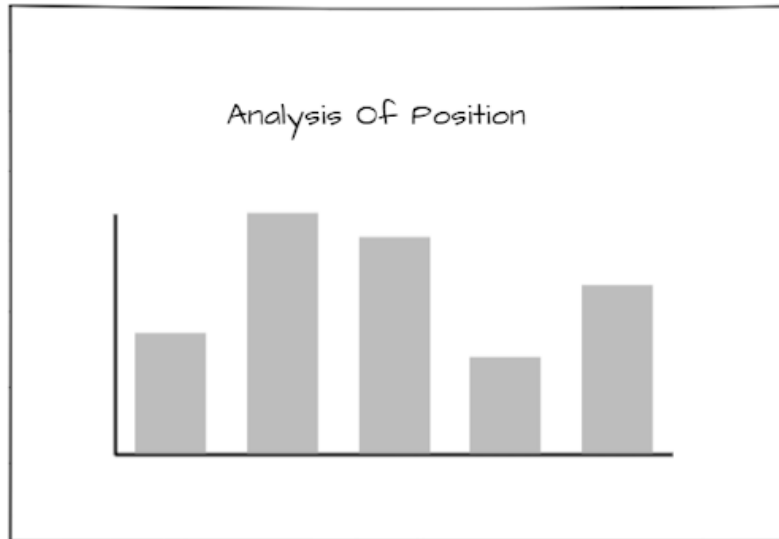


Figure 2.3.5 Analysis Result Page

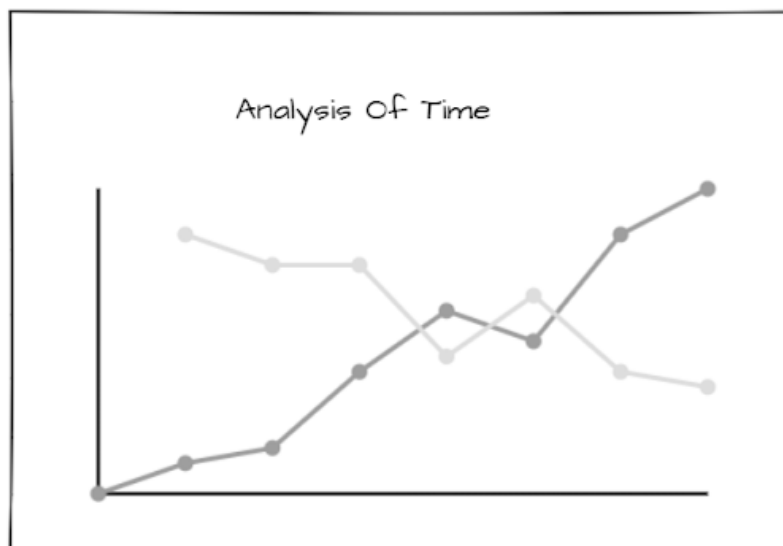


Figure 2.3.6 Analysis Result Page

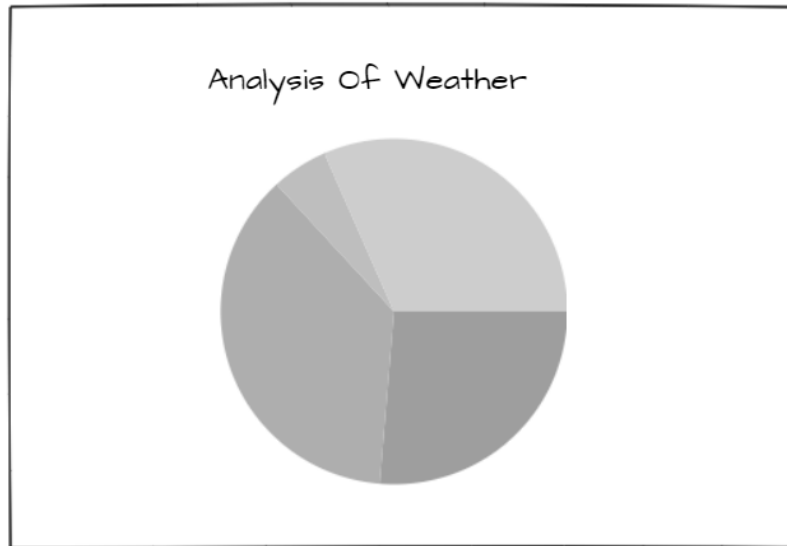


Figure 2.3.7 Analysis Result Page

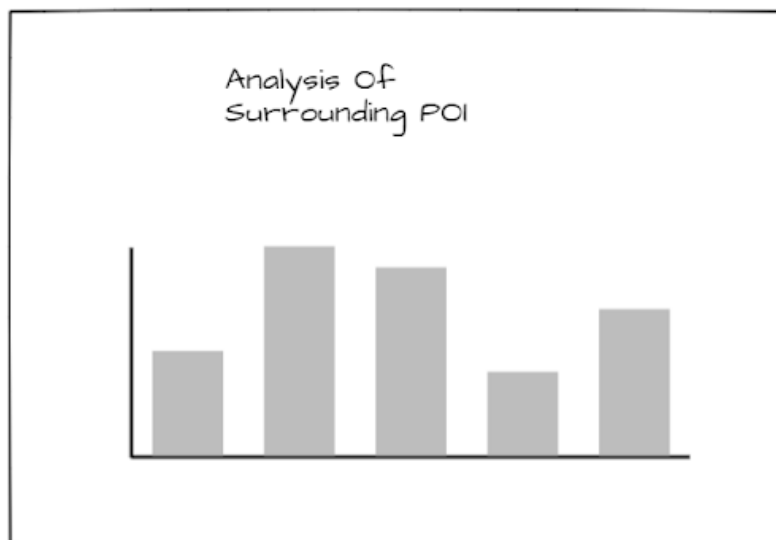


Figure 2.3.8 Analysis Result Page

2.4 Design Schema

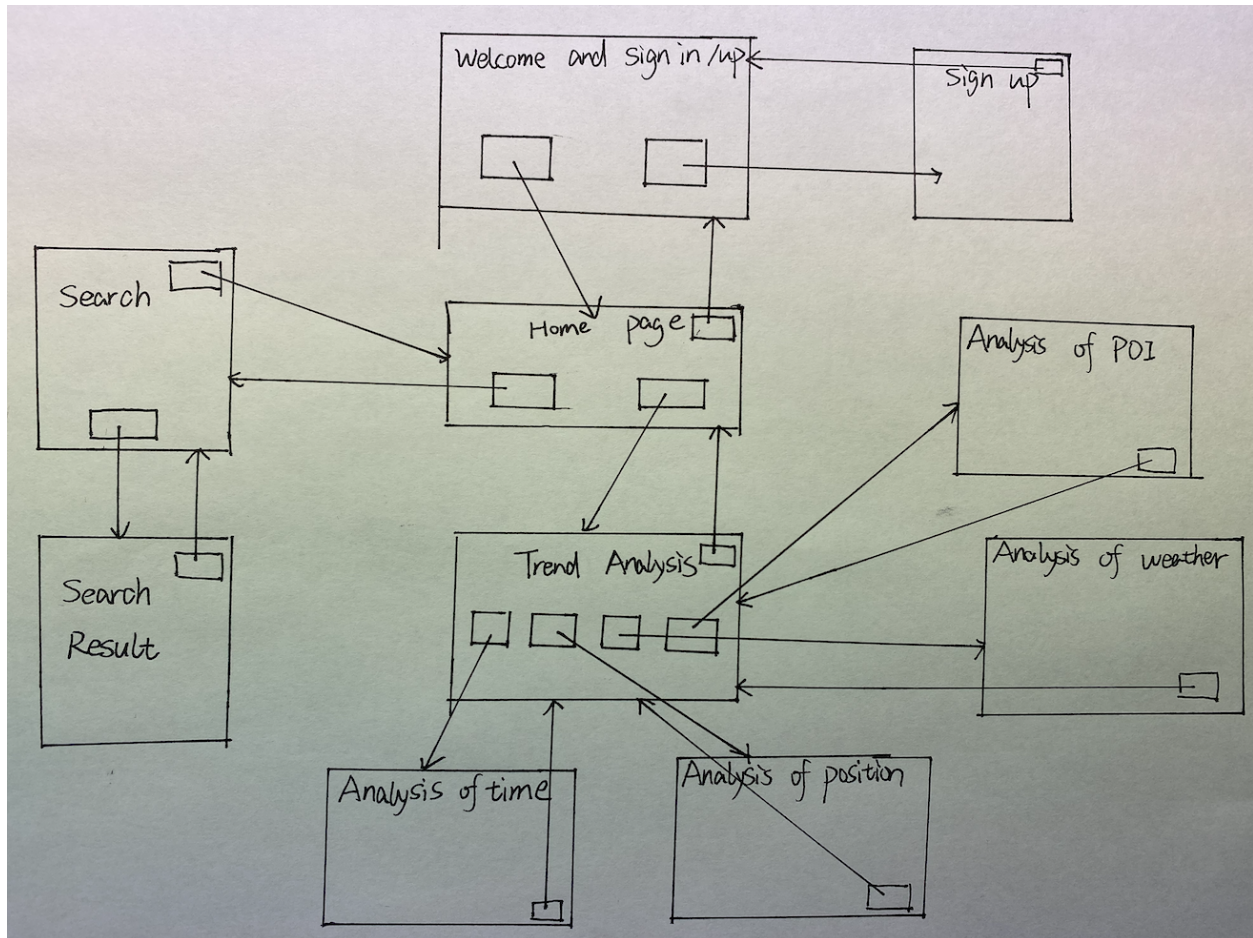


Figure 2.4 Design Schema