SIH 2020

Organization Name : **Indian Space Research Organization(ISRO)**

Problem Statement : **The numerical weather models are used for generating forecast, these model forecast contains 4D information (i.e., Latitude, Longitude, Height/pressure and Time). These model forecasts are Gridded at a defined sampling interval, and are very useful for planning and decision supports. WebGL is a Javascript API for rendering high-performance interactive 3D and 2D graphics. The participants must develop a web-based tool for 3D/4D visualization of model forecast.**

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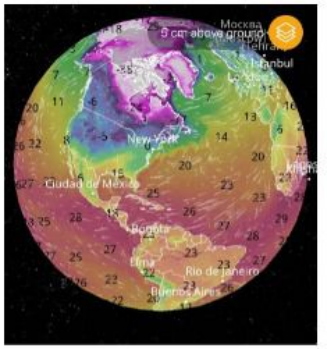
Solution

We will develop a web based tool to generate 3D/4D visualization of weather model using HTML, CSS, and JavaScript. We will use some external libraries and API which are listed below

WebGL :- It is a JavaScript Api which is used to render high quality graphics in a web page. WebGL is going to provide the 3D visualization of earth

ArcGIS :- It is a cloud based platform which contains geographical information. It is going to provide all the geographical information of globe.It will help us to locate and point out different locations on earth

Aeris.js :- It is a JavaScript API for weather data. It is going to provide us all the required information which will ultimately help us to build a heat map



The Numerical weather models are used for generating forecast which contains 4D information (Latitude,Longitude, height/pressure and time). It will go in three easy steps :-

:- With the help of WebGL 3D globe will be generated which will allow us to visualize/ render earth in a 3D way.

:- Arcgis will help in layering of earth by using maps and more geographical information and at last

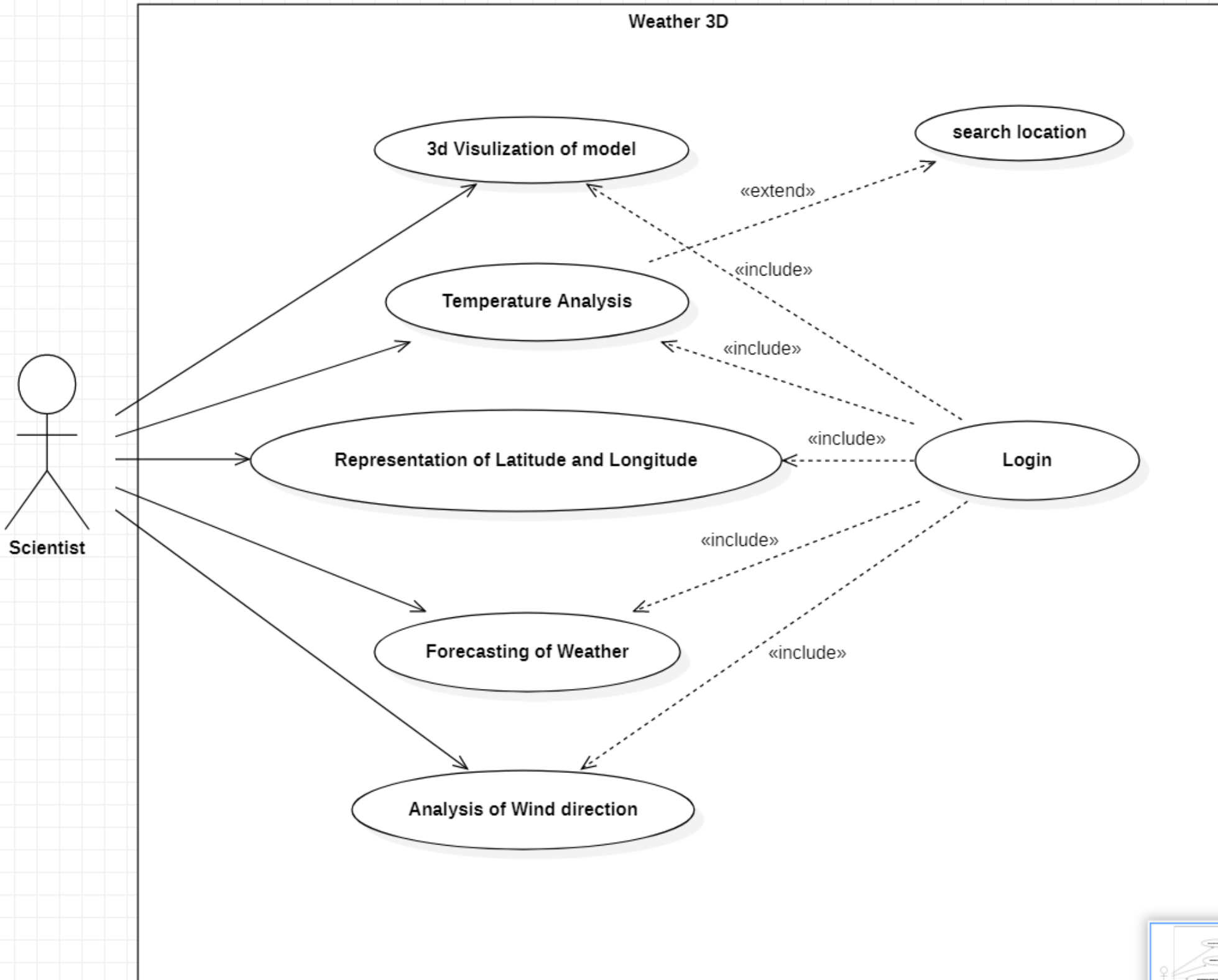
:- We will fetch aeris.js API to get weather data in the form of colours.

Key Feature Of Our Model

1. **We can access the Latitude, Longitude and Height of any place by its name in a 3D animated way**
2. **The Temperature will be represented using Heat Maps**
3. **The wind directions will be represented in a 3D way using Windy .js**

Technology Stack

Front-end Technology	Software	Backend Technology
➢ HTML 5 ➢ CSS 3 ➢ JavaScript ➢ Webgl ➢ ArcGis ➢ Aeris Js	➢ Visual Studio Code (VS code) ➢ Adobe XD	➢ Node Package Manager (npm) ➢ Node.js ➢ Express.js


Weather 3D
3d Visulization of model
search location
«extend»
«include»
Temperature Analysis
«include»
Scientist
Representation of Latitude and Longitude
«include»
Login
«include»
Forecasting of Weather
«include»
Analysis of Wind direction