

Design

Project Team 10

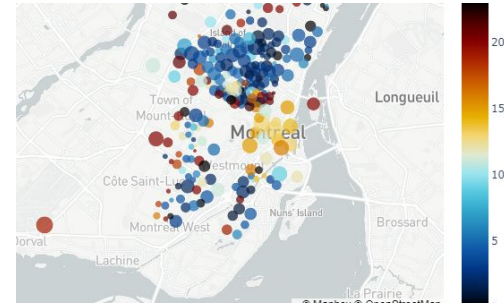
Project Title : *“Visualizing Probabilistic Whereabouts of
Moving Objects”*

Advisor and Client: Dr. Goce Trajcevski

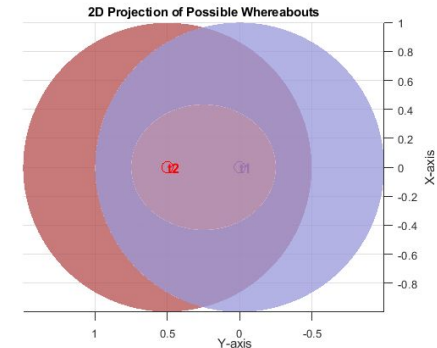
Project Overview

For our project we are going to design & create a web-based application for visualizing the probabilistic whereabouts of moving objects.

- Given a dataset of positions varied with time, use a set of tools to express the probability of the object existing at a given location in between any two samples (Generalize to chains of samples).
- Provide users with an interface that enables the user to enter queries and visualize results.



Plotted Data on a Map



Visualizing Whereabouts in Space

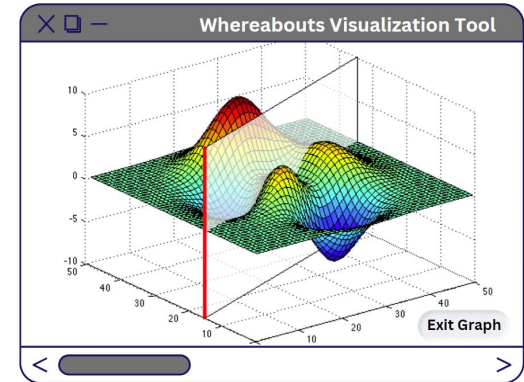
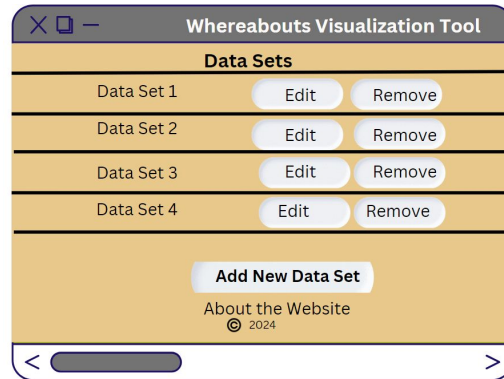
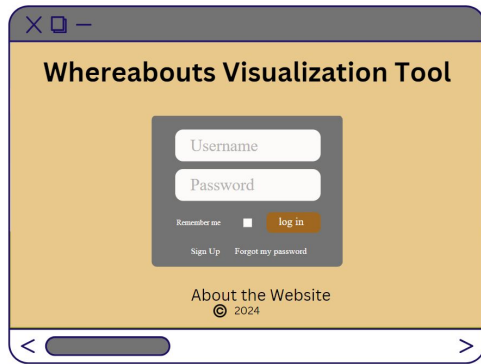
Ideation

- We utilized the Lotus Diagram
- To identify which web app framework to use, we researched what options were available/applicable
- We decided to use Vue Framework for the frontend, and Spring Boot for the backend



Promising Solution

- Data Visualization Web Application
- Allow users to input data sets
- Allow users to share visualizations of data
- Implement several algorithms
 - Necklace (3D Conical)
 - Bridgelet (2D Map Grid)



Market Research

Where does our solution fit within the market?

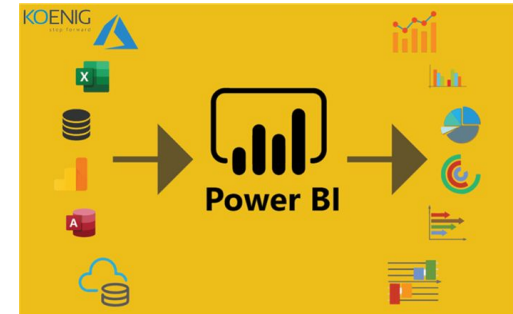
- Market Sector - Information Technology
 - Data Visualization Tools

What competitors reside within this market?

- MathWorks - Makers of MATLAB & Simulink
- Microsoft - Power BI

What differentiates our product from our competitors?

- MATLAB is capable of performing the same analysis but requires programming experience
- Microsoft's Power BI provides comprehensive set of tools for visualizing data but does not support running custom analytics



References

Koenig Solutions. (n.d.). *An in-depth Guide for learning Microsoft Power BI for beginners*. Koenig-solutions.

<https://www.koenig-solutions.com/blog/beginners-guide-for-learning-microsoft-power-bi>

Series. (2023, January 5). What is MATLAB? - 9series - Medium. *Medium*.

<https://medium.com/@9seriesinc/what-is-matlab-fe5ee84cd761>