Tomer Karmazin 209130749
Richard Lung 327084224

AION Requirements Analysis

Functional :

1. User Authentication and Authorization :
    - Users can register for an account and log in securely.

2. Create :
    - Routes :
        - Users can pick a starting & ending point for the route.
        - Created routes will be displayed on the users screen.
        - Users can save routes to their profile for future use.
        - All routes can be downloaded as an image for offline use.
        - Route description (Optional).
    - Trips :
        - Choose a date for each trip, must choose at least one route (can be added by creating), name & description optional.

3. Tracking :
    - ‘Home’ page will display a registered user’s created routes & trips.
    - Under each route, should display when last navigated. For no nav used, will display NULL. Trips can be expanded to display routes and description.
    - Route & Trip filtering can be done by the following : Most popular, Favorites, Length of route/trip, Number of routes (trip only).

4. Editing & Updating :
    - Each route/Trip can be ‘liked’ (Saved in Favorites).
    - Bookmark groups (folders) can be created to save routes/trips by user (Favorites default folder).
    - Users can update each route/trip’s name.
    - Description text edit.

5. Route sharing :
    - Users can share their routes/trips on all social platforms.

6. Live location :
    - Show real time location of the user location relativity to the route prograss.

7. Mobile accessibility :
    - The system should be accessible via mobile devices, with a responsive design for different screen sizes.

8. Data Security :
    - The system should implement security measures to protect user data and ensure confidentiality.

Architectural :

1. Client-Server Architecture :
    - The system shall use a Client-Server architecture to enable user interface and a server.

2. Scalability :
    - The system shall be designed to scale horizontally to handle increased user traffic during peak periods.
    - The architecture should support dynamic scaling based on demand.

3. Performance :
    - The platform shall provide a response time of no more than 2 seconds for critical user interactions, such as page loads.
    - The platform shall provide an optimal response time for creating a new route.

4. Security :
    - The platform shall adhere to industry-standard security practices, including data encryption in transient and at rest. HTTPS, Firewall.
    - User authentication and authorization mechanisms shall be implemented securely.

5. Data Architecture :
    - Three way-sync Data backup every one hour.

6. User Experience :
    - The platform shall support responsive web design to provide a consistent user experience across various devices and screen sizes.
    - Simple yet attractive UI (gamification).

Technological :

1. Programing Languages and frameworks :
    - Javascript, Python.

2. Database Technologies :
    - MongoDB (?).
    - The DB needs to be able to store pictures, Date & time, User data, location data.

3. Frontend Technologies :
    - HTML5, CSS, REACT.

4. Backend Technologies :
    - Node.js (?), PHP (?), Apache (?).

5. IB-RRT* algorithm :
    - Using this algorithm and building upon it in order to construct the best 'off-road path' possible from a given data set.

6. Geospatial data analysis and integration :
    - Using a DEM picture to calculate the gradient characteristics in the given area, in order to build a 'slop map' that later will be used in the greater calculations of the desired path.