Module 1 – Statement of Work

AIDI 2005 CAPSTONE II

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1. Executive Summary

Optimal path algorithms are a major interest in artificial intelligence. It has many applications in business, including product delivery and shipment processes, as well as in navigation. The aim for this project is to allow the user to create an optimal path between different stores to allow them to complete their shopping lists with various items in the shortest possible time.

2. Rationale Statement

To develop a website that takes in user credentials and asks user to select their TO-DO list by clicking on various sub-categories like groceries, electronics, clothing apparels. The user selects items from these sub-categories. Based on the items selected, the website suggests a route from the user's current location that he can take to complete all its errands in one go.

3. Problem Statement

"To find the optimal path from the starting point (source), covering all the sub-destinations".

The problem statements aim at determining the closest sub-destination from the current position, the starting point being the user's current location.

4. AI Agent

AI agent is the artificial intelligent component that helps to achieve the goal of our project. Based on the business problem to find the shortest path for the user, we will be using Utility-based AI agents. The reason for choosing Utility-based AI agent is that it not only helps to find the shortest path, but it also provides the best possible way to achieve it.

Another advantage of using Utility-based AI agent is that in our project there will be multiple alternatives i.e. multiple paths to choose from and agents must choose the best path amongst all. Below is the architecture for utility-based AI agent.

Source: *https://www.javatpoint.com/types-of-ai-agents*
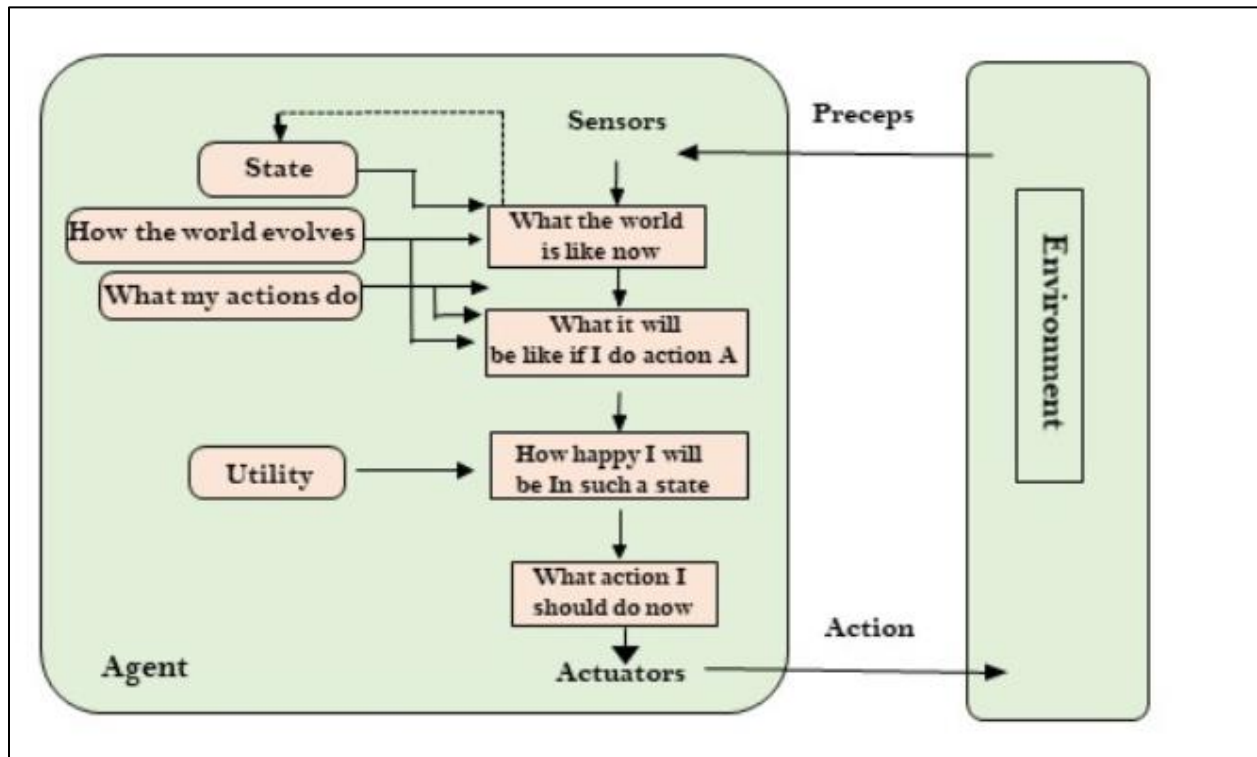
5. Data and Software Requirements

Data:
- A database of common shopping list items and what category of items they fall under
- Information on what stores have each item available

Software:
- For front end: HTML, CSS
- For back end: Python, SQL
- For deployment: GitHub

6. Assumptions

- The data mentioned in the project is created based on the different use case scenarios without any bias and discrimination.
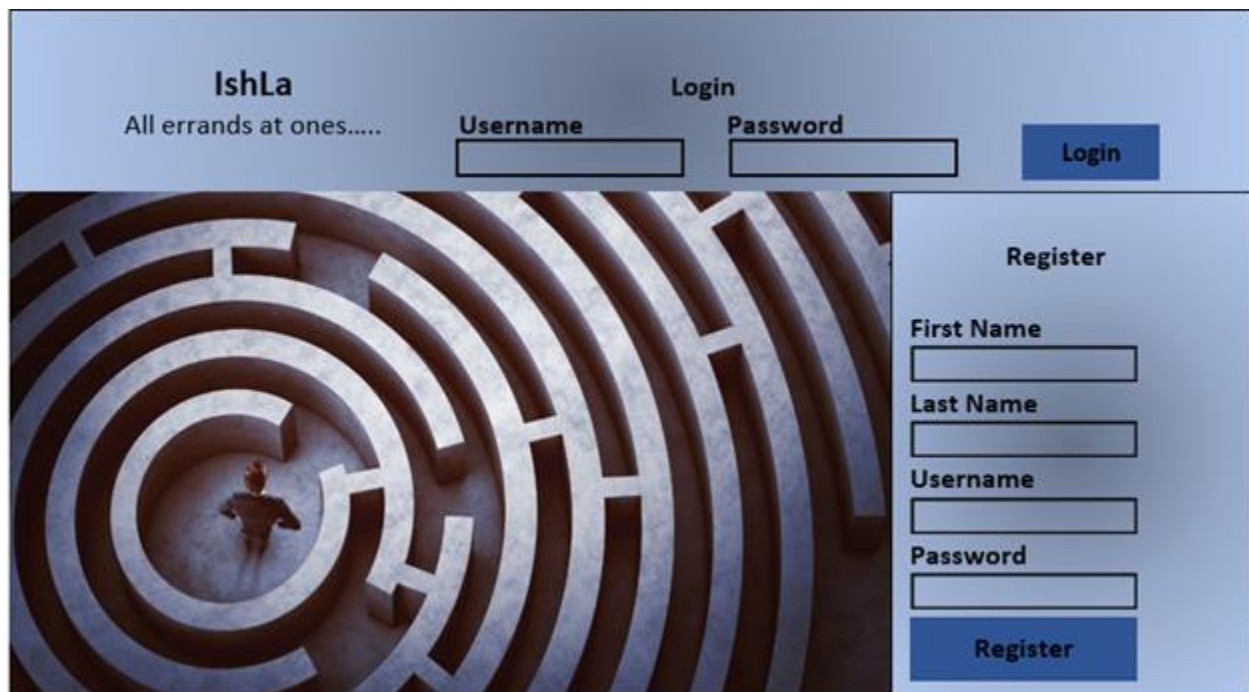
7. Constraints

- For the purpose of the project, it will be assumed that grocery items will be found in grocery stores and electronics items found in electronics stores, regardless of the stores' actual stock
- Items that can be included in the shopping list will be limited to those that are already in the database
- There are limited resources to complete the project and we cannot add any more resources (i.e. team members)

8. IshLa Layout

1. The User Registration/ Login Page

On this page the user would either login or register as new user.

2. The home page

This page would display the list of errands that a person needs to do. After selecting each category, items in the list would open a new page to select the type of item the user wants to buy.

TO-DO List

1. Groceries

2. Clothing

3. Electronics

4. Eat out

5. Gas Station

Make my route

3. Categories
    a. The Groceries page

The user would select the items it needs to buy by checking the check box.

GROCERIES

☐ Eggs   ☐ Salt

☐ Milk   ☐ Sugar

☐ Fruits   ☐ Spices

☐ Vegetables   ☐ Sauces

☐ Flour   And so on…..

Done

b. The clothing page

Clothing

- [ ] Jeans
- [ ] Trousers
- [ ] Shirts
- [ ] T-shirts
- [ ] Sports wear

- [ ] Dresses
- [ ] Skirts
- [ ] Tops
- [ ] Scarfs

And so on.....

[Done]

c. Electronics Page

Electronics

- [ ] Mobile
- [ ] Laptop
- [ ] Tabs
- [ ] EarPods
- [ ] Speakers

- [ ] TV
- [ ] Microwave
- [ ] Washing Machine

And so on.....

[Done]

The other 2 pages would also be designed the same.

4. Location Verification

After selecting the items, the user would click on the "Make my route button" on the home page. This would direct him to a screen where the user address would be asked.
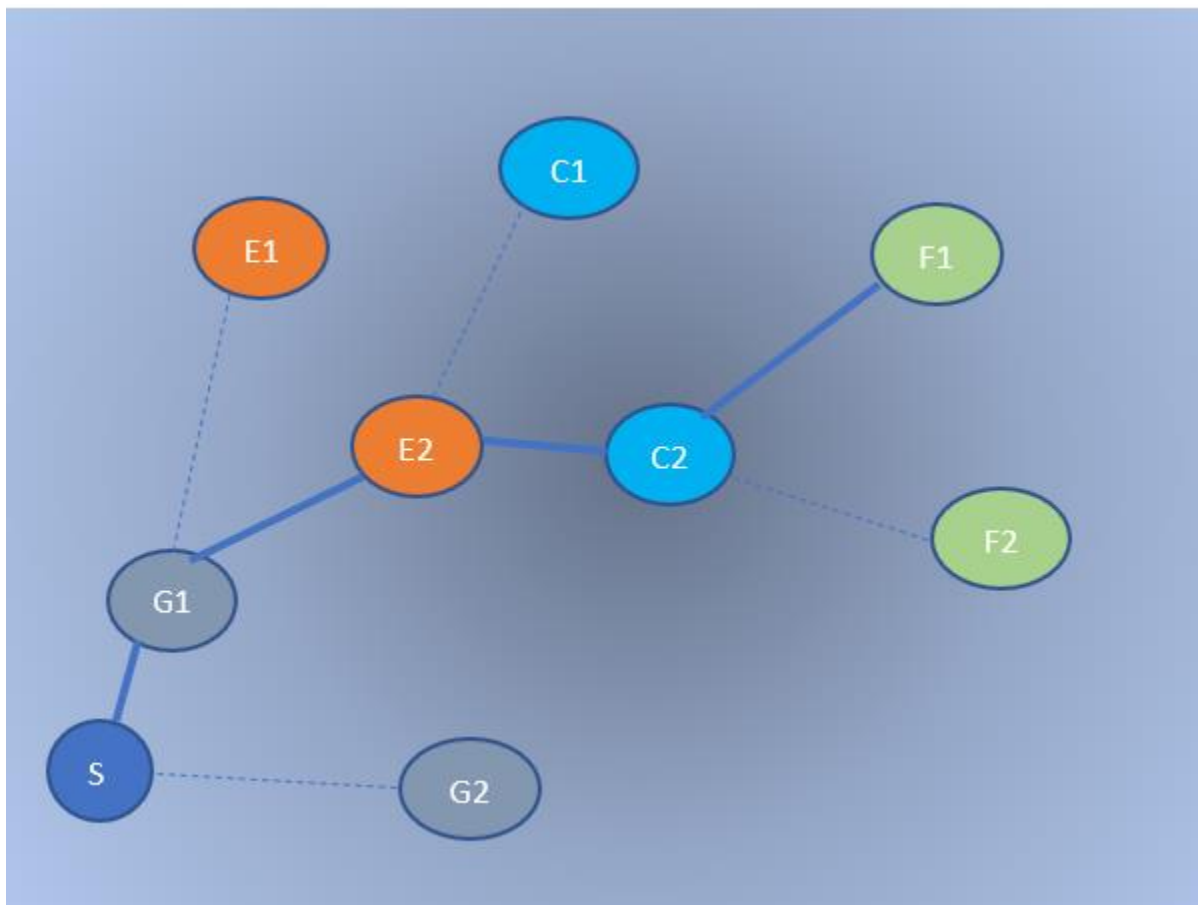
5. Visualization Map

After clicking on Done, the user would be directed to a map.

The user starts from S and first the closest place to S is determined which is Grocery store 1 (G1). Which means that the user should first visit the grocery store for the groceries. After the grocery store the user can go out to buy electronics at E2 which is close in comparison to E1 from G1. After buying electronics from E2, the closest store is Clothing store C2 and at the end the user can eat out at F1. Hence the optimal path followed by the user would be S->G1->E2->C2->F1.

9.   Project Plan

ID	Milestone	Submission Date	# of hours	# of Resources
1	Submit Project proposal (including: SOW, ppt slides, github profile)	Feb 1, 2021	10	4
2	Minimum Viable Product (MVP) (version 1)	Feb 19, 2021	10	4
3	MVP (version 2)	Mar 12, 2021	10	4
4	Minimum Marketable Product (MMP)	March 26, 2021	10	4
5	Product to launch	April 11, 2021	10	4
6	Final Evaluation	April 16, 2021	10	4