WID3002

NATURAL LANGUAGE PROCESSING

CSNAVBOT

FRONT END: HTML. CSS and JAVASCRIPT

BACKEND: PYTHON + Flask

app.py

Defines a Flask web application that provides a chatbot-like interface for assisting users with navigation, events, and courses at a university.

1	**home**	The main route that renders the homepage with map, event, and course data.
2	**read_map_data, read_event_data, read_course_data**	Reads and processes map, event and course data from a Google Sheets document.
3	**location_exists, event_exists**	Checks if a given location/event exists in the map data.
4	**get_nav_image**	Generates a navigation image based on the user's start and destination points.
5	**get_stored_data**	Returns stored navigation answers and current session data.
6	**get_bot_response**	Processes user input and returns a bot response for navigation help.

pngcsv.py

loads an image of a floor plan, preprocesses it, and then extracts the pixel data to create a simplified representation of the floor plan in a CSV

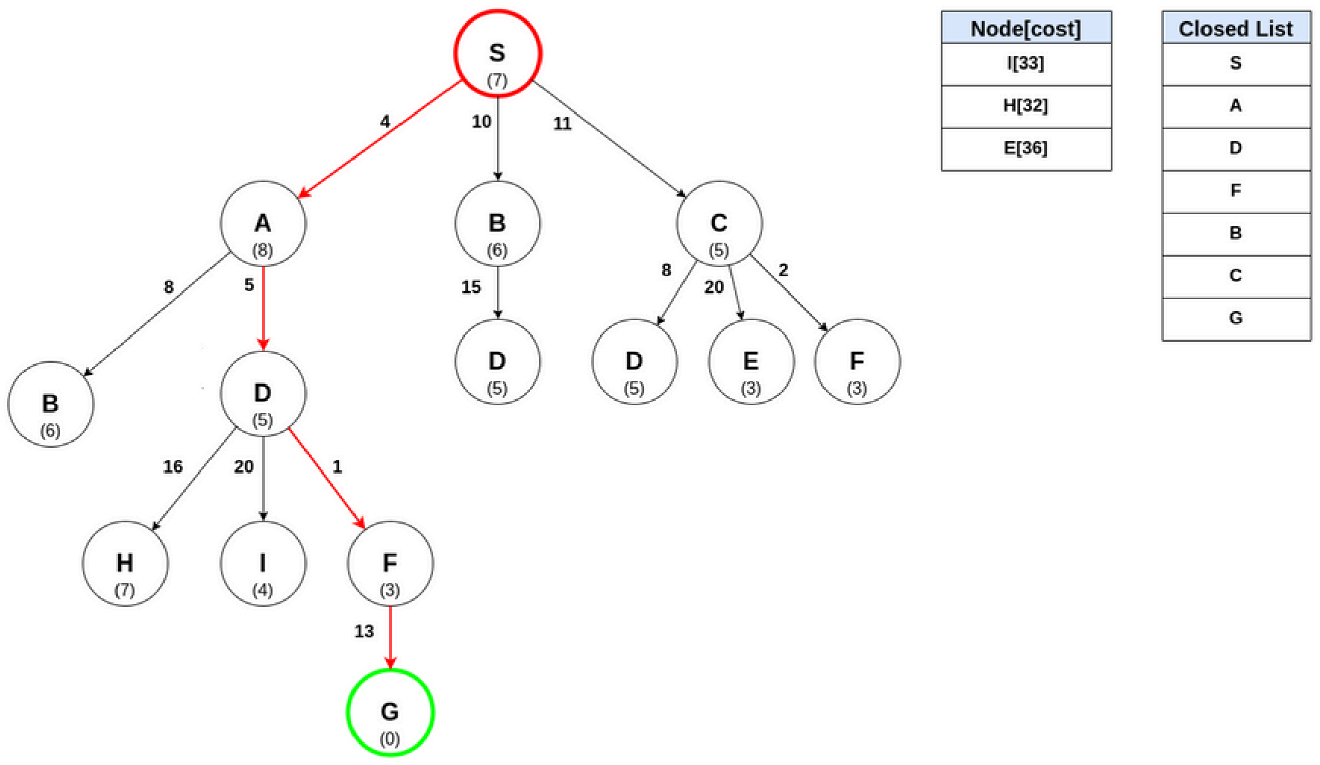
1	**Image Loading**	The script loads an image from a specified path and resizes it.
2	**Convert Grayscale**	Converts the image to grayscale.
3	**Thresholding**	Applies a binary threshold to separate the image content from the background.
4	**Contour Detection**	Finds contours in the thresholded image.
5	**Data Conversion**	Converts the image data to a NumPy array, modifies it by changing specific pixel values, and removes columns containing only zeros.
6	**CSV File Creation**	Writes the processed pixel data into a CSV file

A* ALGORITHM

nav_algo.py

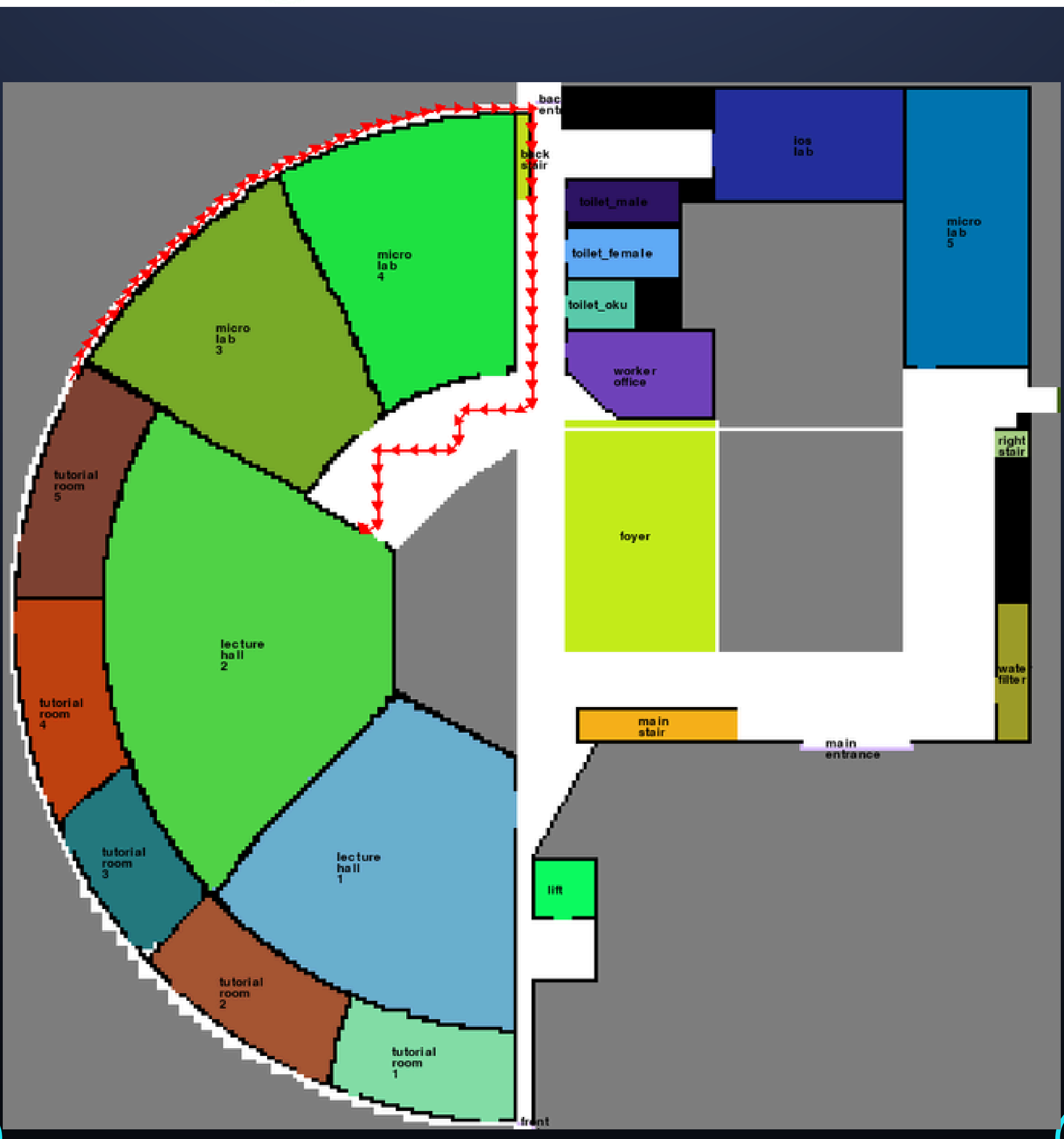
Contains functions related to pathfinding using the A* algorithm for navigation in a maze-like environment represented by CSV files.

1	**A* Algorithm**	It includes functions to calculate the distance and heuristic between points, and the main A* function for pathfinding.
2	**Floor Transitions**	The code handles transitions between different floors, which is useful for multi-level pathfinding scenarios.
3	**Accessibility**	There's a consideration for users with disabilities (is_OKU parameter), ensuring the path includes lifts where necessary.
4	**Dynamic Path Drawing**	Utilizes the pygame library to draw the path on a maze representation, which could be part of a graphical user interface.

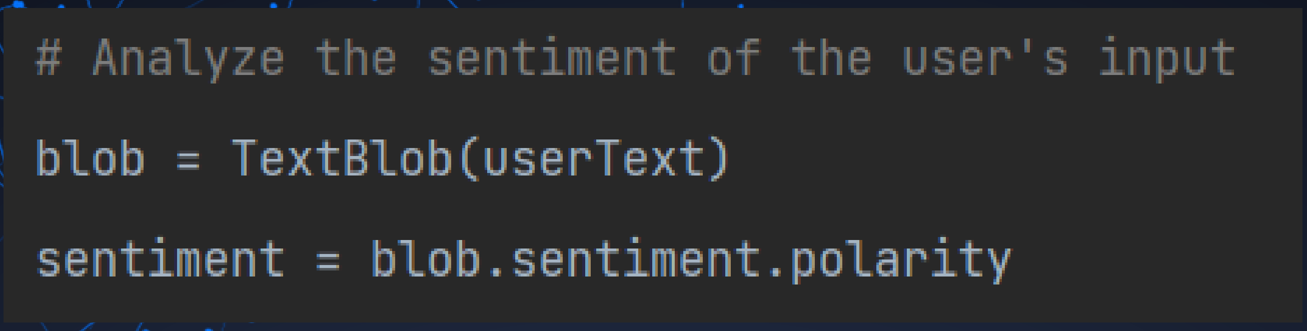


Node[cost]
I[33]
H[32]
E[36]

Closed List
S
A
D
F
B
C
G

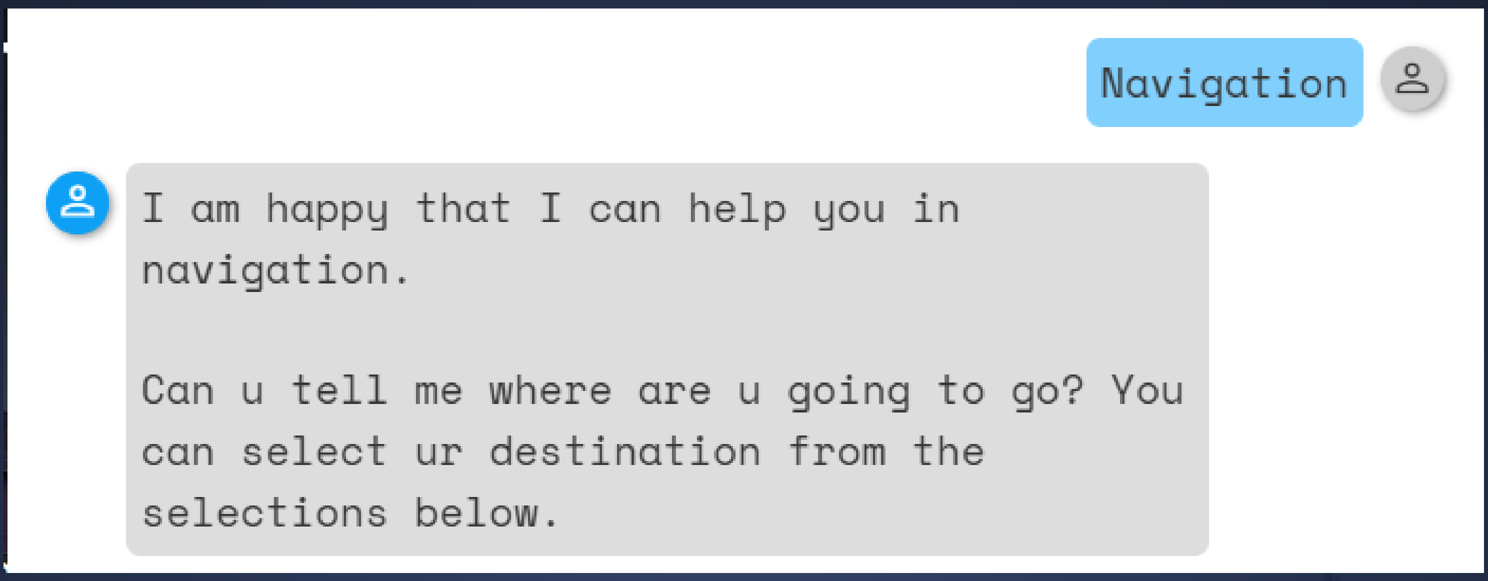


SENTIMENT ANALYSIS (TEXTBLOB)



```
# Analyze the sentiment of the user's input
blob = TextBlob(userText)
sentiment = blob.sentiment.polarity
```

Reply if neutral:

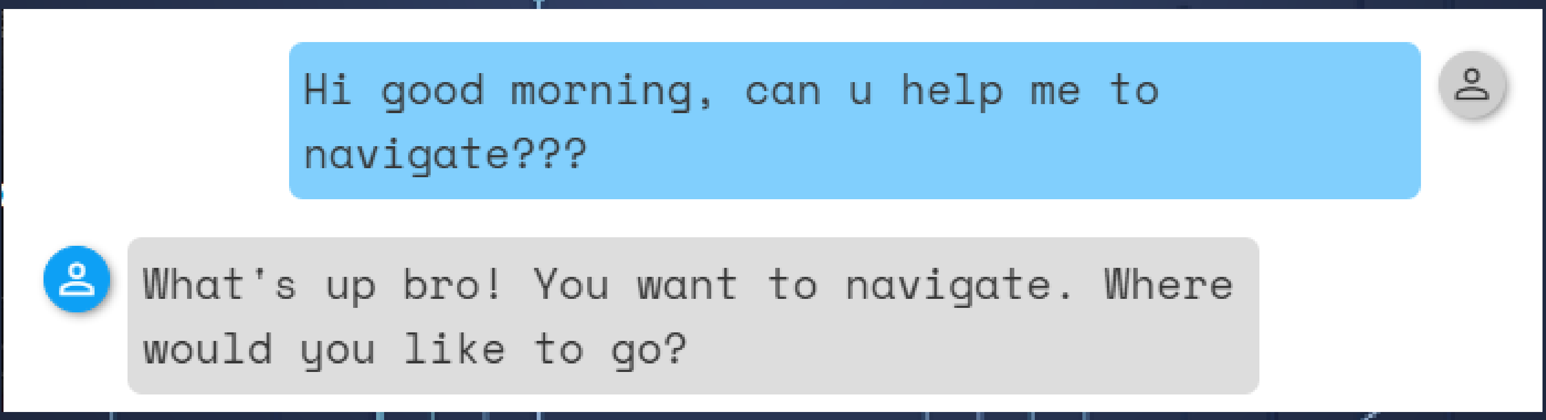


Navigation

I am happy that I can help you in navigation.

Can u tell me where are u going to go? You can select ur destination from the selections below.

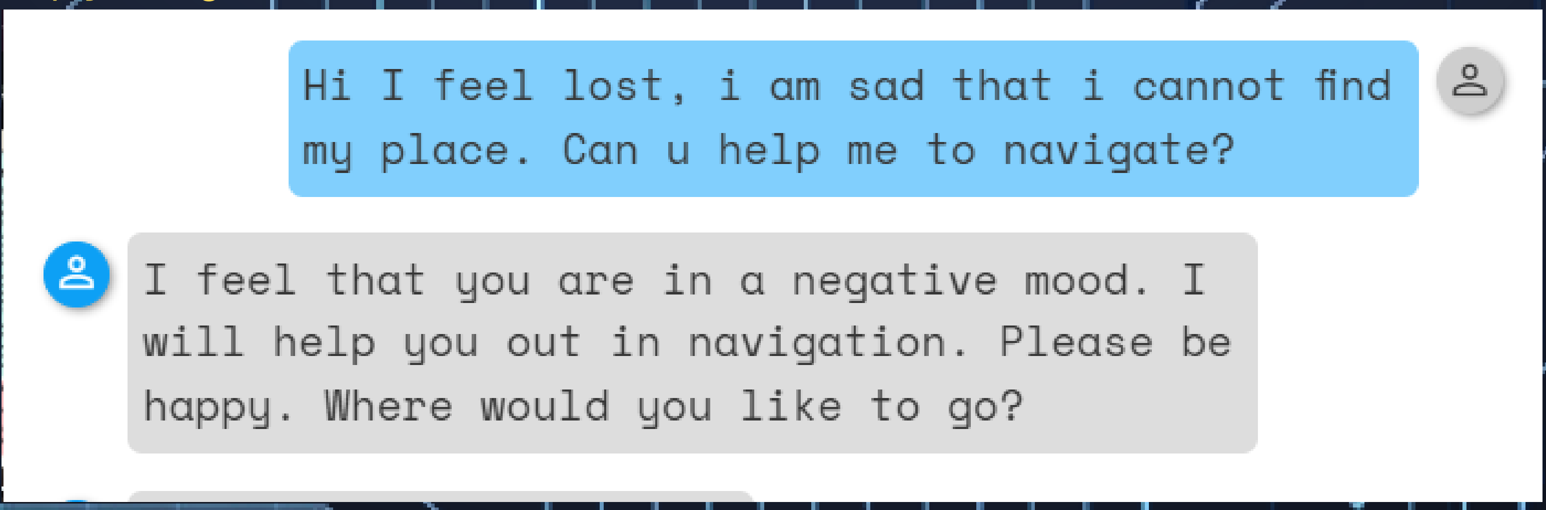
Reply if positive:



Hi good morning, can u help me to navigate???

What's up bro! You want to navigate. Where would you like to go?

Reply if negative:



Hi I feel lost, i am sad that i cannot find my place. Can u help me to navigate?

I feel that you are in a negative mood. I will help you out in navigation. Please be happy. Where would you like to go?

DATASETS

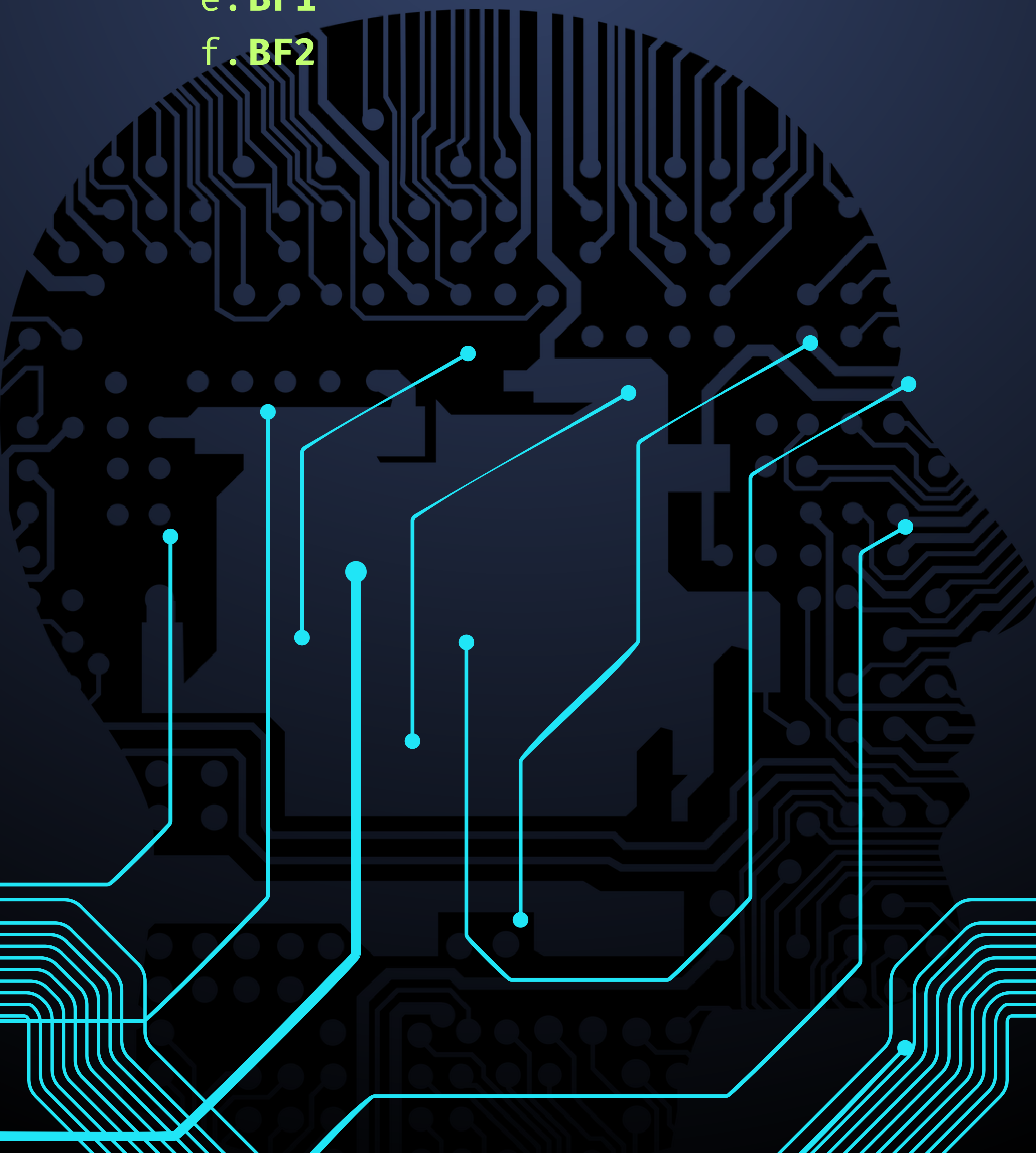
- **Room Database**
  a. Contains information about the rooms/facilities, including location, names and so on

- **Transition Database**
  a. Contains data on how to transition between different floor

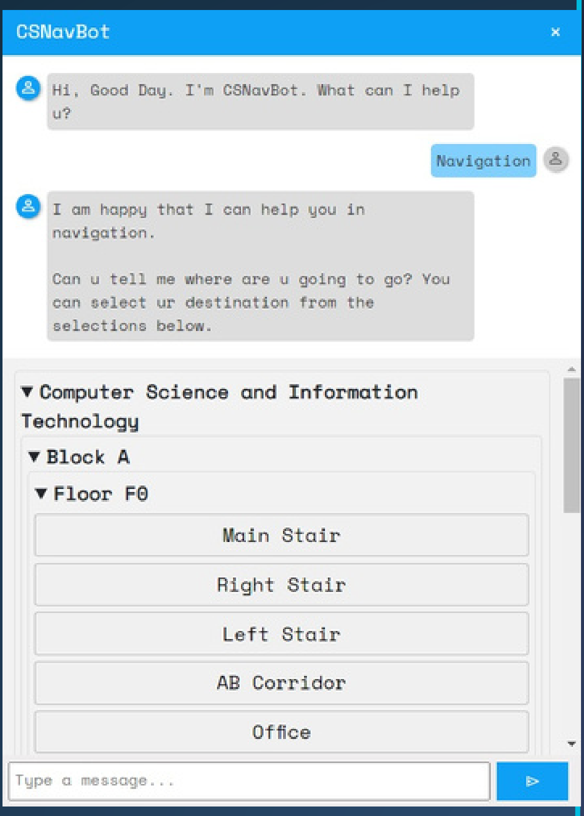
- **STU_MVT4**
  a. Data get from Maya about the courses

- **Event Database**
  a. Include schedules or occurrences in UM

- **Map Data**
  map for different floors or buildings
  a. AGF
  b. AF1
  c. AF2
  d. BGF
  e. BF1
  f. BF2



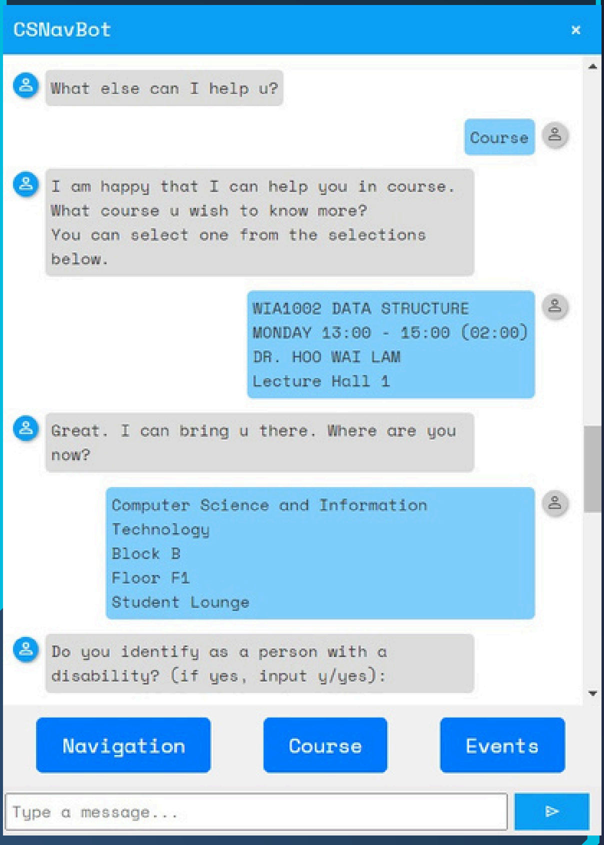
DEMO



Hi, Good Day. I'm CSNavBot. What can I help u?

I am happy that I can help you in navigation.

Can u tell me where are u going to go? You can select ur destination from the selections below.



What else can I help u?

I am happy that I can help you in course.
What course u wish to know more?
You can select one from the selections below.

WIA1002 DATA STRUCTURE
MONDAY 13:00 - 15:00 (02:00)
DR. HOO WAI LAM
Lecture Hall 1

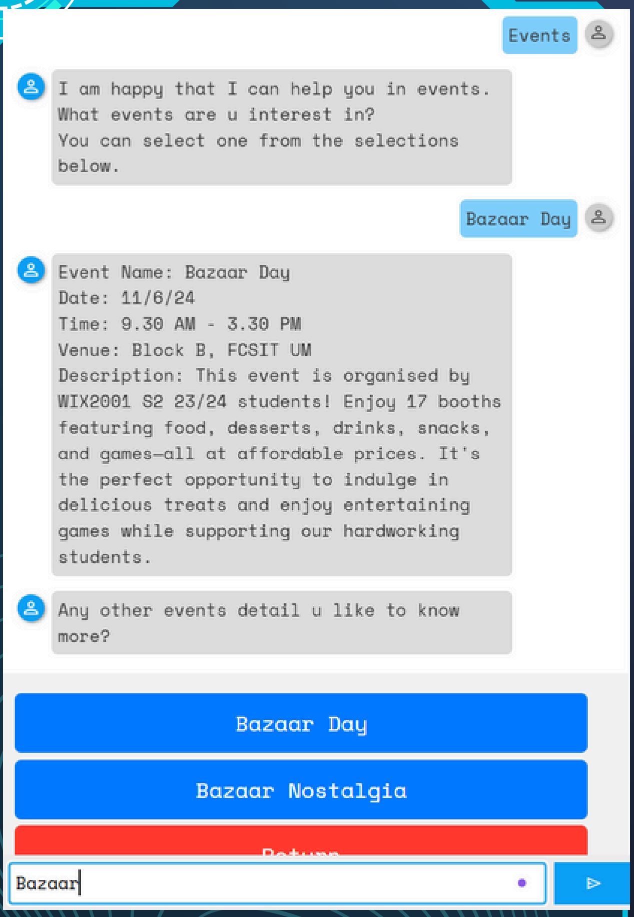
Great. I can bring u there. Where are you now?

Computer Science and Information Technology
Block B
Floor F1
Student Lounge

Do you identify as a person with a disability? (if yes, input y/yes):

__navigation__

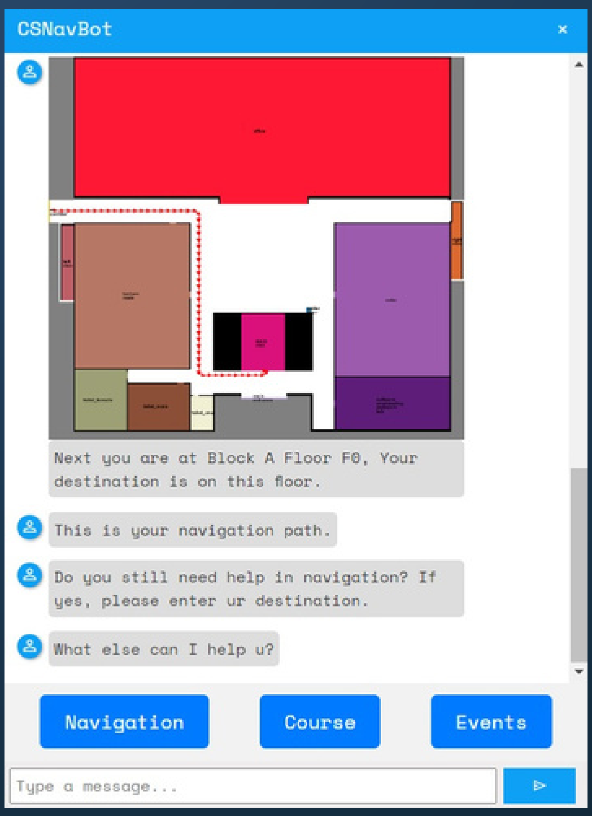
__course__



I am happy that I can help you in events.
What events are u interest in?
You can select one from the selections below.

Event Name: Bazaar Day
Date: 11/6/24
Time: 9.30 AM - 3.30 PM
Venue: Block B, FCSIT UM
Description: This event is organised by WIX2001 S2 23/24 students! Enjoy 17 booths featuring food, desserts, drinks, snacks, and games—all at affordable prices. It's the perfect opportunity to indulge in delicious treats and enjoy entertaining games while supporting our hardworking students.

Any other events detail u like to know more?



Next you are at Block A Floor F0, Your destination is on this floor.

This is your navigation path.

Do you still need help in navigation? If yes, please enter ur destination.

What else can I help u?

__events__

__location__

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