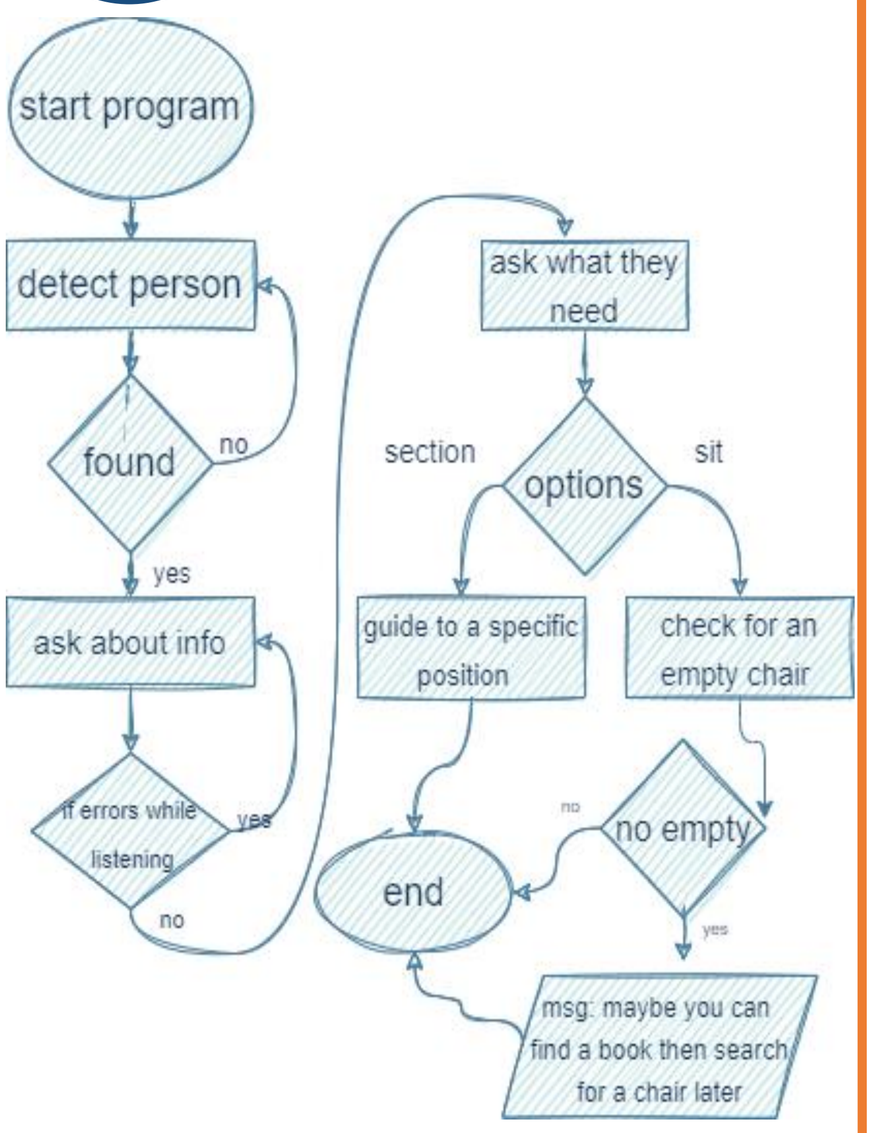
AAST-CAI

Serving People in library Using Turtlebot

1 Abstract

People in library need to give their info to the librarian in order to borrow books. Also in the library, people sometimes struggle to find the section or the book they need.

2 Program Flow



Scenario

Mike is a librarian and he has a lot to do, answer people questions, guide them and take their info. So, we designed our system to help decrease Mike's work by taking the info and guide people instead of him.

Our system

Our system takes info about people entering the library, it helps people to find an empty chair, the section that they are looking for, it can ask each person reading in the library about what they are reading and whether they like it or not.

Algorithm

1- Detect a person using Astra camera.
- using ML algorithm Yolo.

2- Ask the person about its information.
- Store info until the day ends, then send it to the database and erase its own memory.

3- Ask whether they like to sit or go to a specific section.
- using navigation to navigate to a specific location.
- use Yolo to detect empty chairs.

4- Ask person reading in the library about its feedback of the book they read.

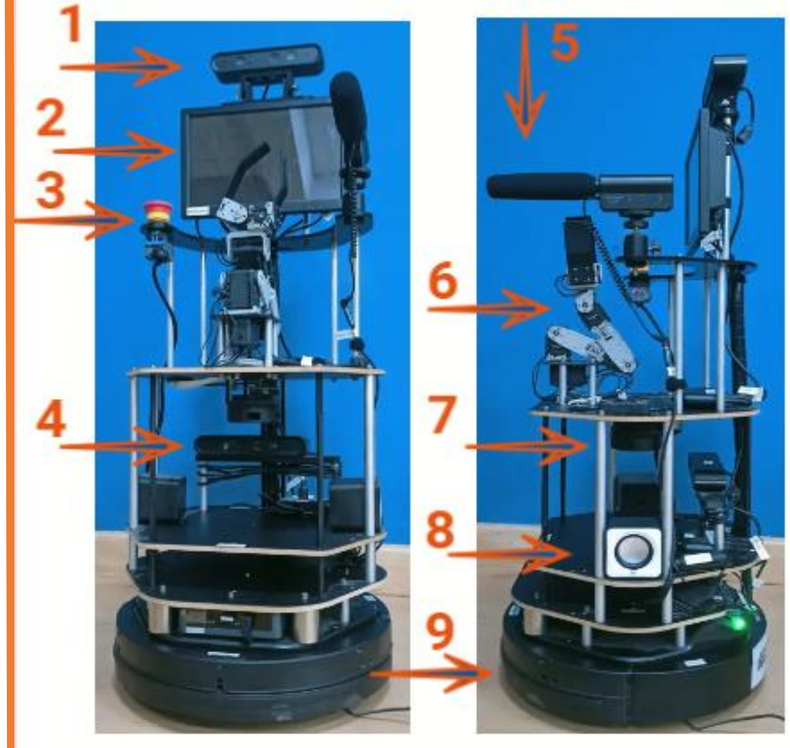
Future work

1 - Use edge computing to reduce computational power in robot.

2 - Use a faster algorithm.

3 - Add more services e.g.(bring drinks)
- need another arm

3 Hardware



Front Side

1 --> Top Astra camera

2 --> Touch screen for monitoring

3 --> Emergency button

4 --> Astra camera

5 --> Mike for speech recognition and synthesis

6 --> Robot arm

7 --> Lidar for navigation

8 --> Speakers

9 --> Kabuki

4 Limitation

1- Action takes time

2- Slow to reach a specific position.

3-Low storage to store all people info so it might be limited to specific number of people.

4- Need to be charged every 4 hours.