BLG 456E 2019/2020 Fall

Project Proposal Form

Project Name: First Air Bender

Group Name: avatar-fans

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Project Description: In our project, we are going to develop the portable air conditioner system which includes the communication channel between temperature sensors in rooms and the portable robot that adjust the heat. Firstly, desired heat for each room should be defined by the user of the systems. If the sensors detect the heat exceeds the threshold, it will send request to robot for adjusting the heat through communication channel. When the robot take request from any sensor, it will find the path to the room where the requesting sensor is by using localization, mapping and path finding. When the robot arrives to room it will open the air conditioner to adjust the heat. We will use Gazebo simulation for environment.

Occupancy grid path planning method will be used in our project. Dijkstra's Algorithm can be used to find shortest path. TCP socket programming will be used for communication between robot and heat sensors. Laser will be used to detect obstacles and avoid from them while robot is moving.

Project Tasks and Work Packages:

Bünyamin YAŞAR

- Communication Channel
    1. Sensor management
    2. Decision whether threshold exceeding or not.
    3. Request heat adjustment
    4. Respond to request

Gökhan KIYĞA

- Path Planning
    1. Localisation
    2. Mapping
    3. Path finding

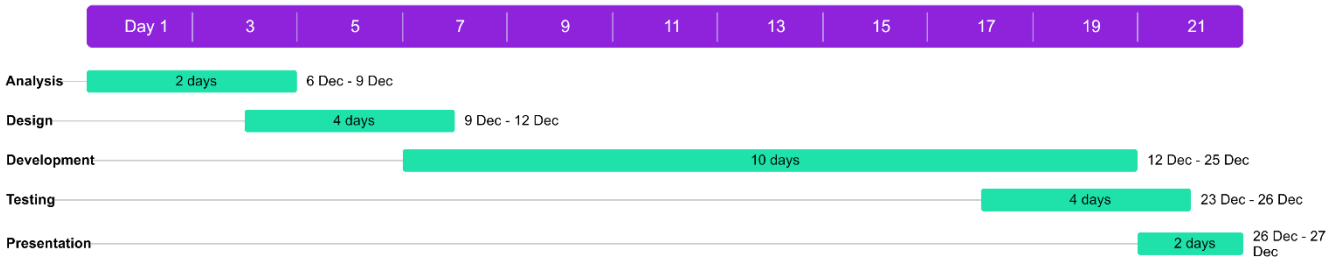
Abdullatif Hasan ARSLAN

- Simulation Environment and Testing
    1. Set the simulation environment
    2. Connecting modules
    3. Testing
    4. Success Criteria

Nurdoğan KARAMAN

- Perception and Movement
    1. Detect dynamic objects using sensor
    2. Make robot to avoid collision
    3. Movement through path that found

Project Timeline:



References:

[1] https://husarion.com/tutorials/ros-tutorials/7-path-planning/