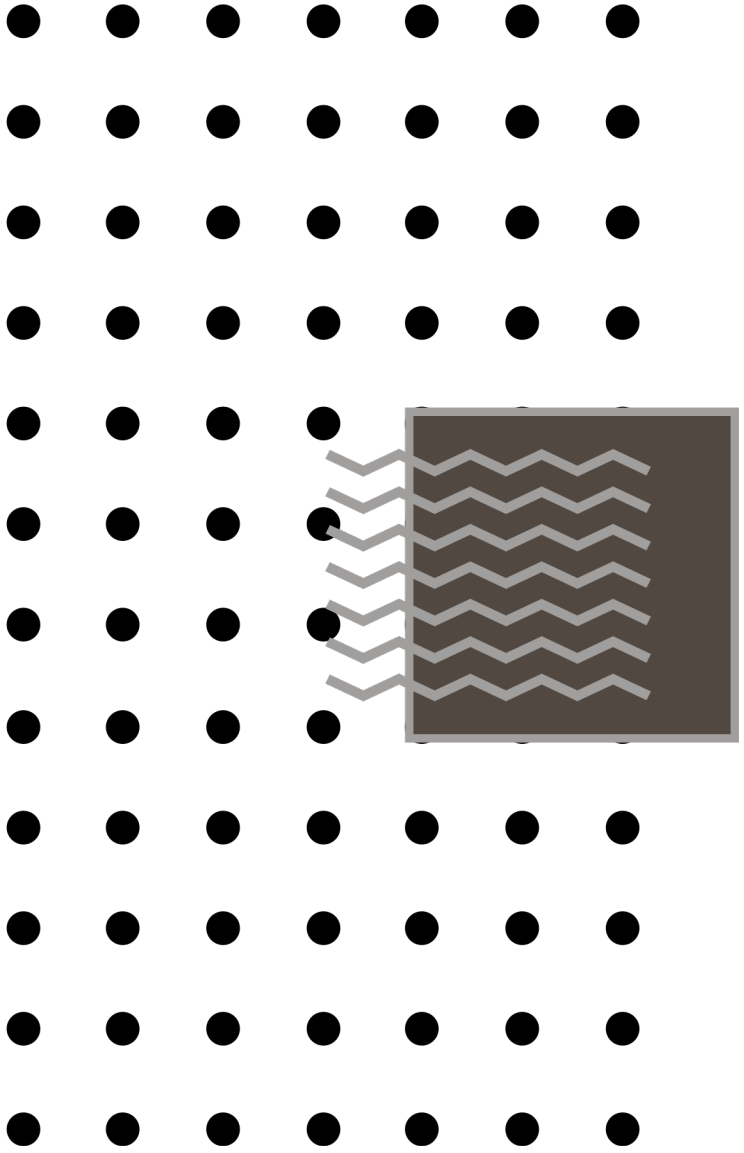

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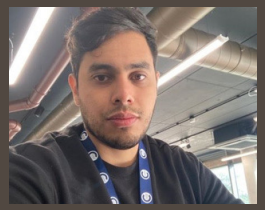
ROBOT RECEPTIONIST

Group 5

THE TEAM



Jonathan Arreola

Project Manager/Robot Kinematics

Balaji Vedal Ramesh

Path Planning

Krishna Keshav Mote

Path Planning

Shuhua Cao

Navigation & Object Detection

Manideep Reddy Tamma

SLAM & Computer Vision

Kshitij Raje

Speech Recognition

Sudhanshu Upadhye

Text to Speech

PROJECT TIMELINE

March

- Project Kickoff
- System Preparation
- Literature Review

April

- Literature Review Completion
- Interim Review
- System Definition
- System Detailed Design

May

- Physical testing at AIRC
- Testing at hotel
- System Testing
- System Implementation

Today

- Final Implementation

Group Project Demonstration

OBJECTIVES

01

Greeting

The robot must greet the customers who check-in to the hotel.

02

Interaction

The robot must interact with the customers and reply to them.

03

Navigation

The robot must guide the customers to the Red Dot bar from the Reception.

04

Safety

The robot should be safe to operate in a closed environment.

PAL TIAGO

(YUNI)

PAL Robotics: A
Spanish Company

TIAGo is a service robot meant to work in confined spaces. The robot was developed for research purposes.

- Human-like
- Customisable
- Retractable Torso
- 5-finger hand
- Differential drive base
- ROS based

WORKING ENVIRONMENT

Reception and foyer area

Greet and guide the customers to the Red Dot bar area from the Reception desk.

Double Tree by Hilton, Milton Keynes
Stadium Way W, Bletchley, Milton Keynes
MK1 1ST


HUMAN ROBOT
INTERACTION

INTERACTION

Body movements

The robot interacts with customers with human-like gestures using the Hey-5 end effector and 7-DOF arm. The pan-tilt head and the retractable torso enhance the human-like feel of the robot.

Body Movements

Movement of the robot arm, torso, and head for performing human-like gestures.

Speech

Talk to the customers via the speaker on the robot.

INTERACTION

Speech

The speakers and stereo microphone on the robot aid in improving verbal interaction between the human and the robot.

Speech Recognition

Recognising human voice using Google API.

Text to Speech (TTS)

Conversion of predefined text to speech output.

NAVIGATION

SLAM & Path Planning

Navigation is achieved using the sensors on the robot and the differential-drive wheels on the mobile base.

Mapping and Localisation

Familiarisation of the robot with the working environment.

Path Planning

Planning an efficient path from one point to another while avoiding obstacles.

SAFETY

Obstacle Avoidance

The robot avoids static and dynamic obstacles in the known environment using the RGB-D camera and the laser sensor on the mobile base.

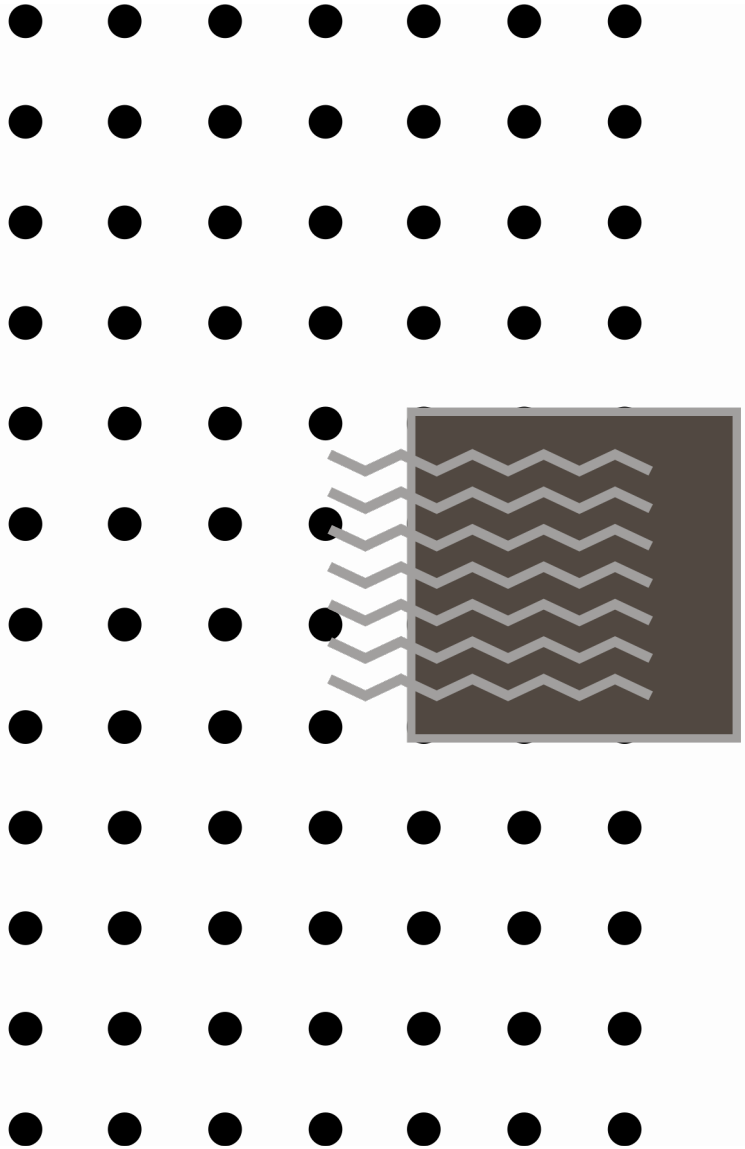
Do it the safe way,
Do it the right way!

FUTURE SCOPE

Face Detection
Recognise human faces and emotions.

Tablet Interface
An interface for the customers to interact with the robot by touch.

Natural Language Processing (NLP)
Enhancing human and robot interaction by improving the understanding of the human language using AI.



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THANK YOU

Any Questions?