# Pharm'automate

Team : Purva Patel
Supreeth Kumar K
Swapnesh Wani

NYU

➢ Objective
➢ Prototype & Design
➢ Block Diagram
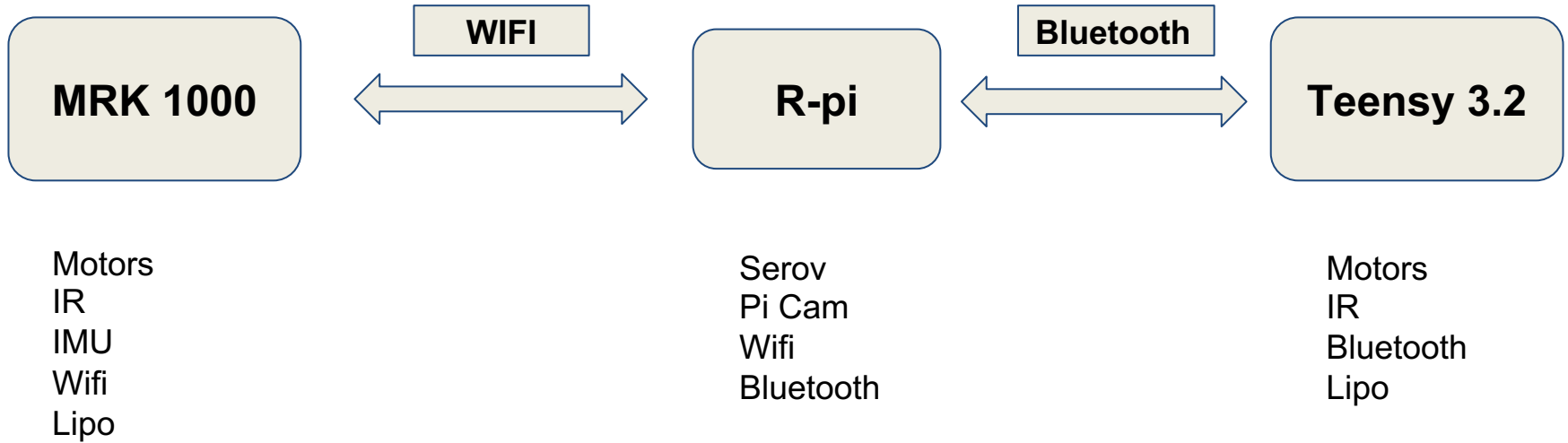➢ Limitations
➢ Future Improvements
➢ Demonstration

Our main objective is to reduce effort made by pharmacists and their assistants in pharmacies such as, to walk over to each individual racks to get the medicines prescribed for patients.

- Raspberry Pi Project Objective

  - Robot goes from start position to rack position, take the medicines and back to the start position. (controlled with MKR1000(Arduino Zero with inbuilt wifi) with RPi over wifi.)
  - Object detection based on color identification(with RPi picamera)
  - Control of rack motion with Teensy3.2 communicating with RPi over Bluetooth module (RN-42).

3

- Raspberry Pi

- IMU sensor (BNO055)

- Teensy 3.2

- IR sensor modules

- DC motors

- Wheels

- L298N motor driver module

- LiPo battery (11.1V 3S)

- Bluetooth Module (RN-42)

- MKR 1000 (Arduino Zero with in built wifi)

NYU

```
┌──────────────┐          ┌─────────┐          ┌──────────────┐
│              │  WIFI    │         │ Bluetooth│              │
│   MRK 1000   │ <──────> │  R-pi   │ <──────> │  Teensy 3.2  │
│              │          │         │          │              │
└──────────────┘          └─────────┘          └──────────────┘
```

Motors                    Serov                 Motors
IR                        Pi Cam                IR
IMU                       Wifi                  Bluetooth
Wifi                      Bluetooth             Lipo
Lipo

- For final project we have a rack system in which mounted robot will travel across rows and column to given input medicine storage racks.

- A wheel robot which starts from the designed start point and reaches rack position collects medicine and gets back to main starting position.
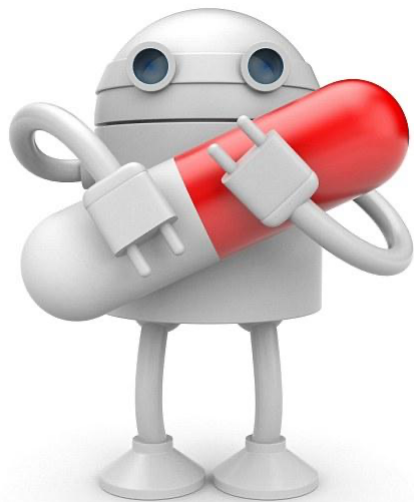
rack indicator

rack

WALL

IR sensor

robot

end point detector
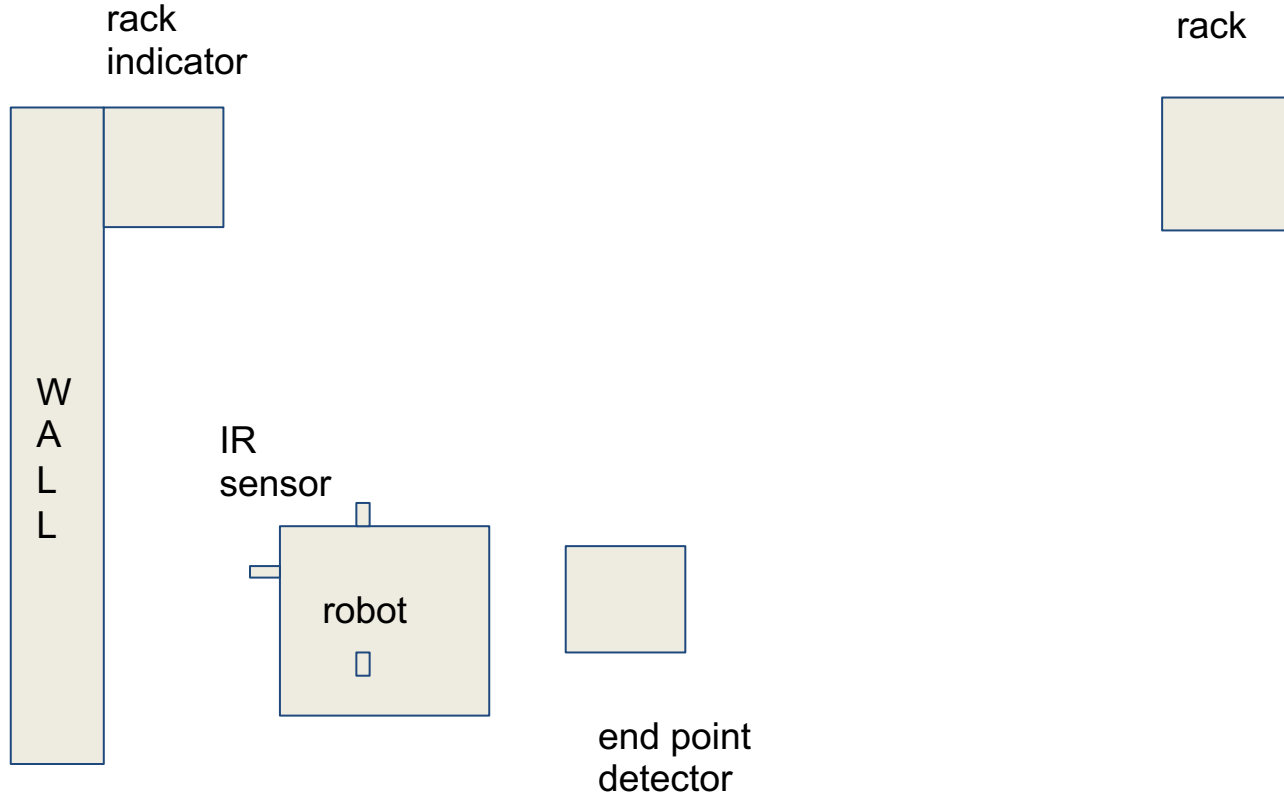
- Communication between R-pi and MKR1000 over Wifi.

- Communication between R-pi and Teensy 3.2 over Bluetooth module.

- Detection of 2 different colour (Black and Red) using Pi-Cam, picking with gripper required medicine.

- We need better motor for good amount of torque to support whole system.

- We need to rethink mechanical design of rack system for better guided way to move the assembly.

- We need to figure out better algorithm for object detection.

NYU

- Communicate with multiple processor for multiple rack system in Pharmacy.

- Robot can follow dynamic path.
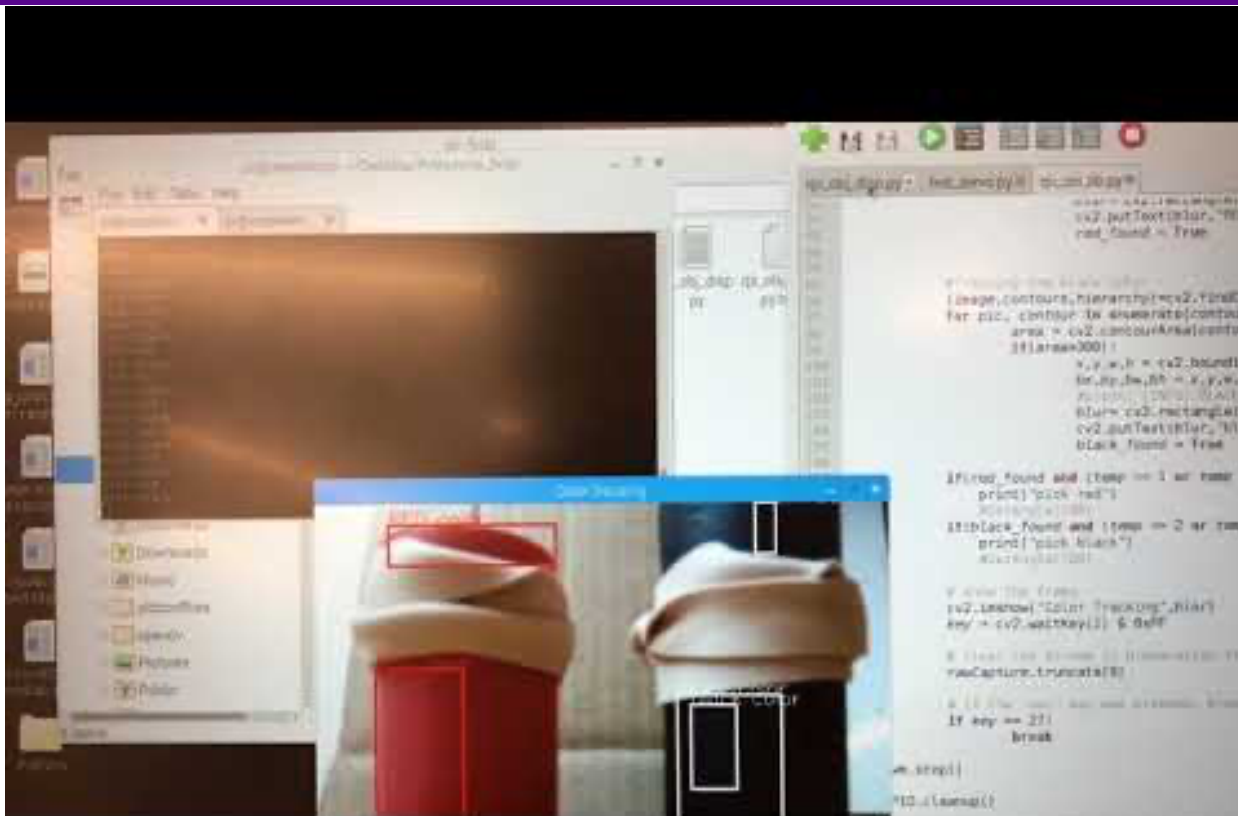
- Medicine can be detected by their name.

# Thank You!