

DESIGN & FABRICATION PROJECT

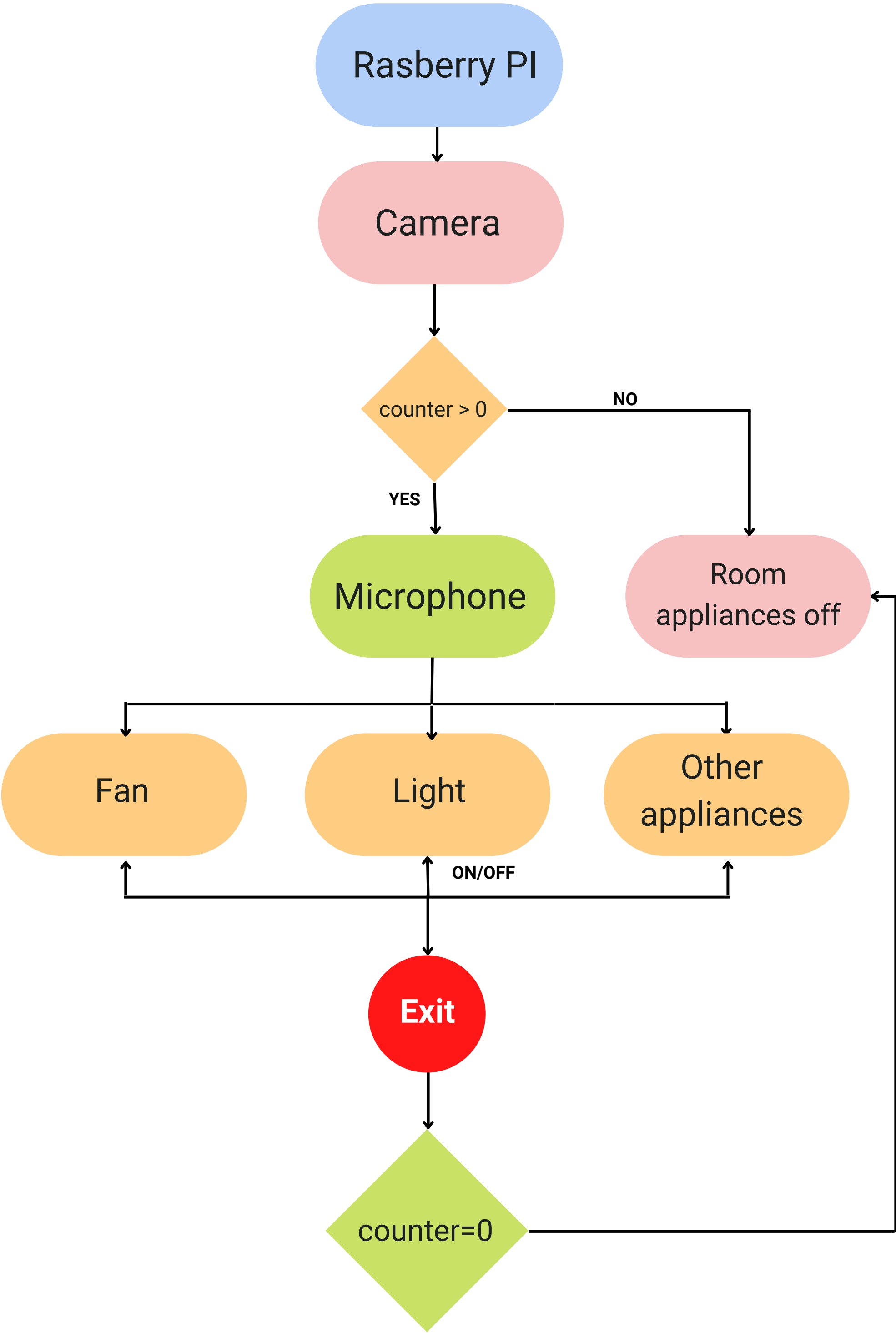
**SMART AND
ENERGY EFFICIENT
ROOM AUTOMATED SYSTEM**

Mentor: Dr. Pushpa Raikwal

Project ID: DFP_120

Rahul Kumar	20BEC081
Siddhant Rai	20BEC103
Sudhanshu Narayan	20BEC108
Prashant Kumar Singh	20BEC074
Saurabh Kumar Jha	20BME054
Rachit Garg	20BEC080
S. Sai Priyanka	20BEC097

DESIGN DETAILING



NOVELTY

- Previously built Voice Controlled Home Automation System has been helpful for disabled people ([reference](#)) . Our project improves the home automation system that has a central control unit(CCU) that controls all the appliances with voice automation.
- We have integrated camera using Machine Learning and Artificial Intelligence to detect the presence of people in the room using a count value to turn off the central control unit(CCU) when there is no one present.
- Our home automation system not only focuses on automating the room appliances but also aims to save energy.
- This addresses the big problem of abled as well as disabled people leaving appliances in working mode while they are not in the room .

FUNCTIONALITY

- CCTV Camera will be used to capture live feed of people entering/leaving the room.
- AI model running on the Raspberry Pi will maintain the people count inside the room using live feed & IR sensor.
- If the count is non-zero, the microphone becomes active which will be further used to control the room's appliances.
- As soon as the count is zero, the microphone becomes inactive and all the room's appliances will be turned off automatically.

PROBLEM

- Disabled people need someone to assist them for even basic daily activities .They even need assistance for switching on the electric appliances.
- People due to their laziness usually forget to turn off the power when they leave their rooms.

NEED AND IDENTIFICATION

We need to help the disabled people so that they don't need assistance for controlling electrical appliances
We need the best modern methods to save energy.

SOLUTION

We are creating smart and energy efficient room automated system which mainly focuses on energy saving by cutting of the power supply when people leave their rooms , providing voice control to operate the electric appliances which will be beneficial to the disabled people.

JUSTIFICATION

As we cutting the power supply totally when there is no one in the room using our device, which will drastically decrease the energy usage.

Disabled people will not need any kind of assistance for controlling the electric appliances.

BILL OF MATERIALS

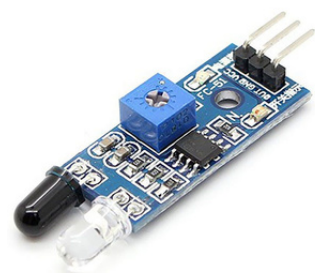
<u>COMPONENTS</u>	<u>SPECIFICATIONS</u>	<u>PRICE</u>
CCTV Camera	Mi Xiaomi Wireless Home Security Camera	2500-4000
IR Proximity Sensor	Range within 50cm	500-1000
Raspberry pi	23	12000-14000
Breadboard	Regular	200-400
Speaker	Regular	1000-1500
Jumper Wire	Regular	1000-1500
Box-Accessories	Screw,ply,board,nail	1500-2000
Frame	Door Frame	1500-2000
Cooling fans and fins	Cooling for raspberry pi	500-1000
Component Box	Acrylic Case	500-1000
Mic	Voice Detector	1000-2000
Storage Device	Pendrive (32 GB)	1000-1500
LED	Regular	300-500
	TOTAL	23500-32400

NEED OF MATERIALS

CCTV Camera: Counting the no. of people through ML and AI.



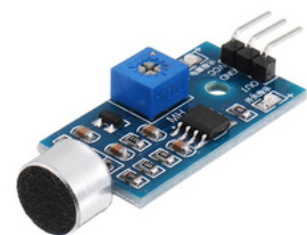
IR Proximity Sensor: Switch on the system on detecting presence of people.



Raspberry pi: To run the AI model. This will be the processing unit of the device.



Mic: For audio command.



Speaker: For audio feedback.



Cooling fans and fins: To keep the temperature of components stable.



Breadboard: For circuit connection.

