STERIBOT

YOUR GUARDIAN OF PURITY IN THE BATTLE OF GERMS

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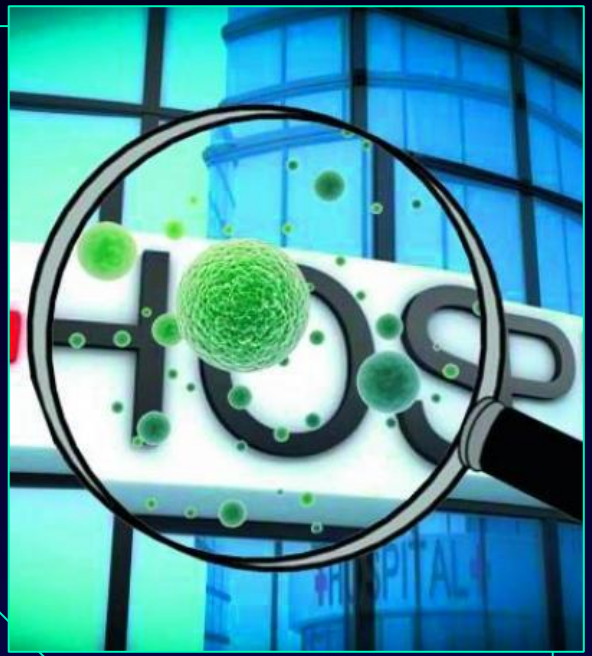
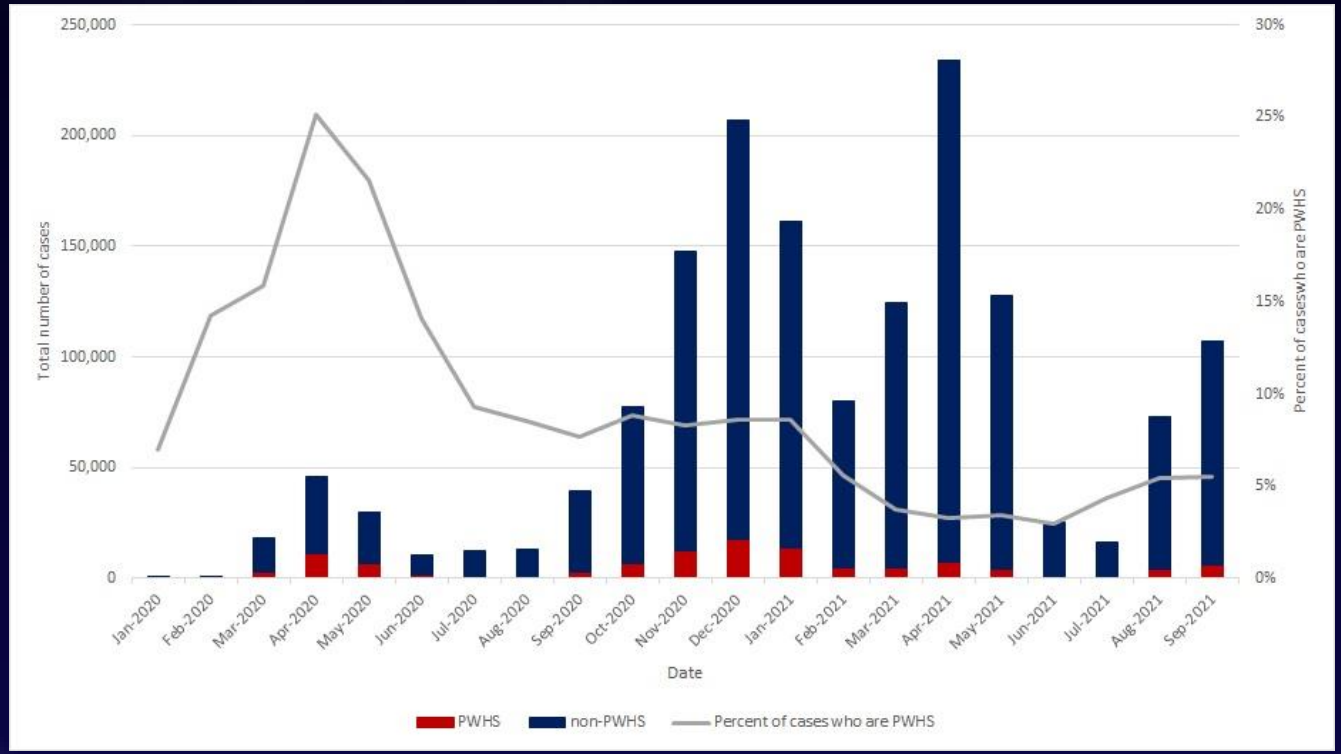


01

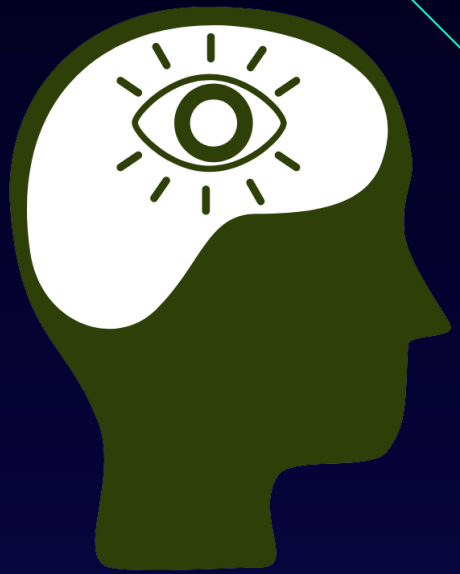
Hospital-Acquired Infections (HAIs)

COVID-19 infections among healthcare workers and other people working in healthcare settings



01

Hospital-Acquired Infections (HAIs)

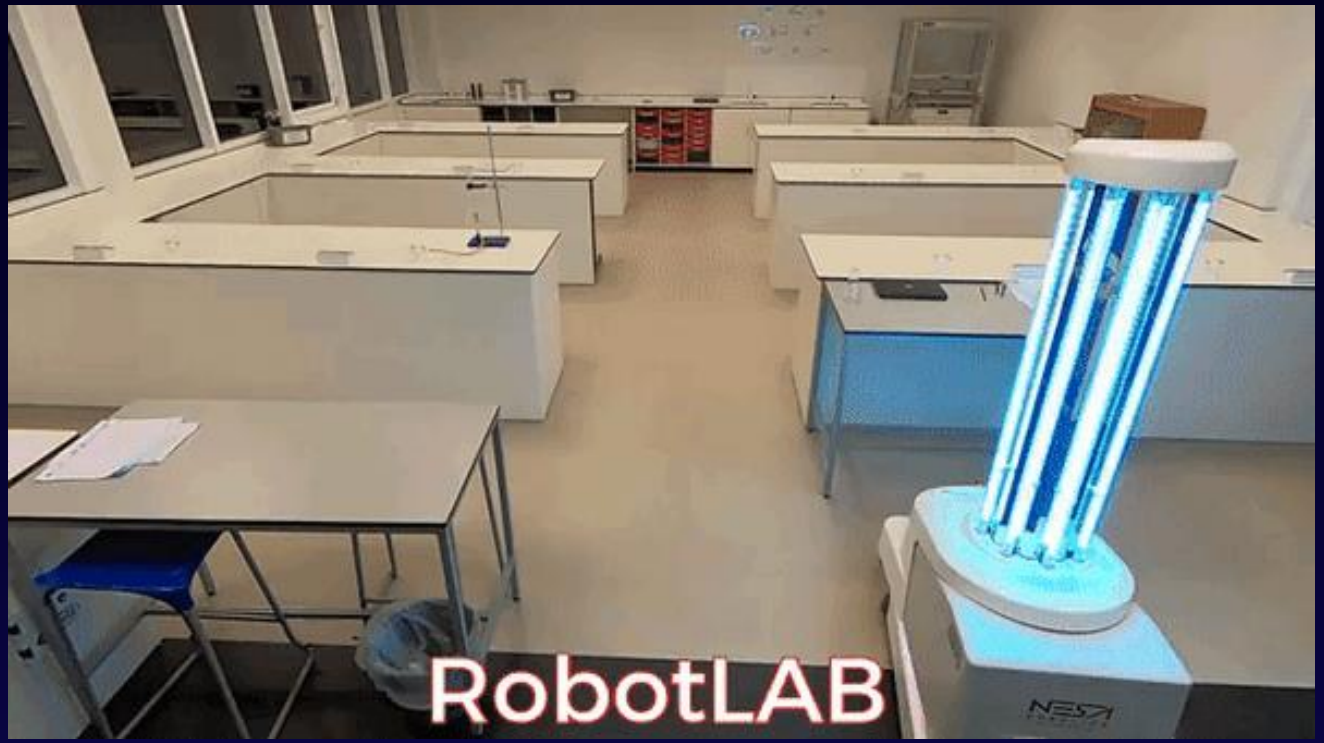


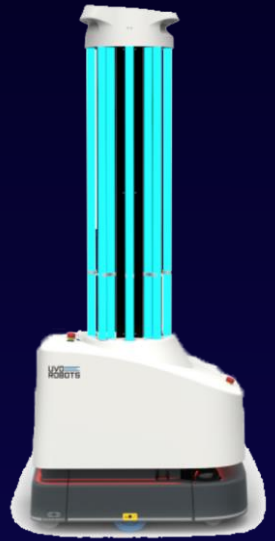
02

Research Journey

02

Research Journey



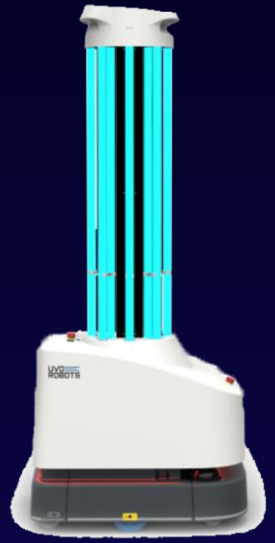


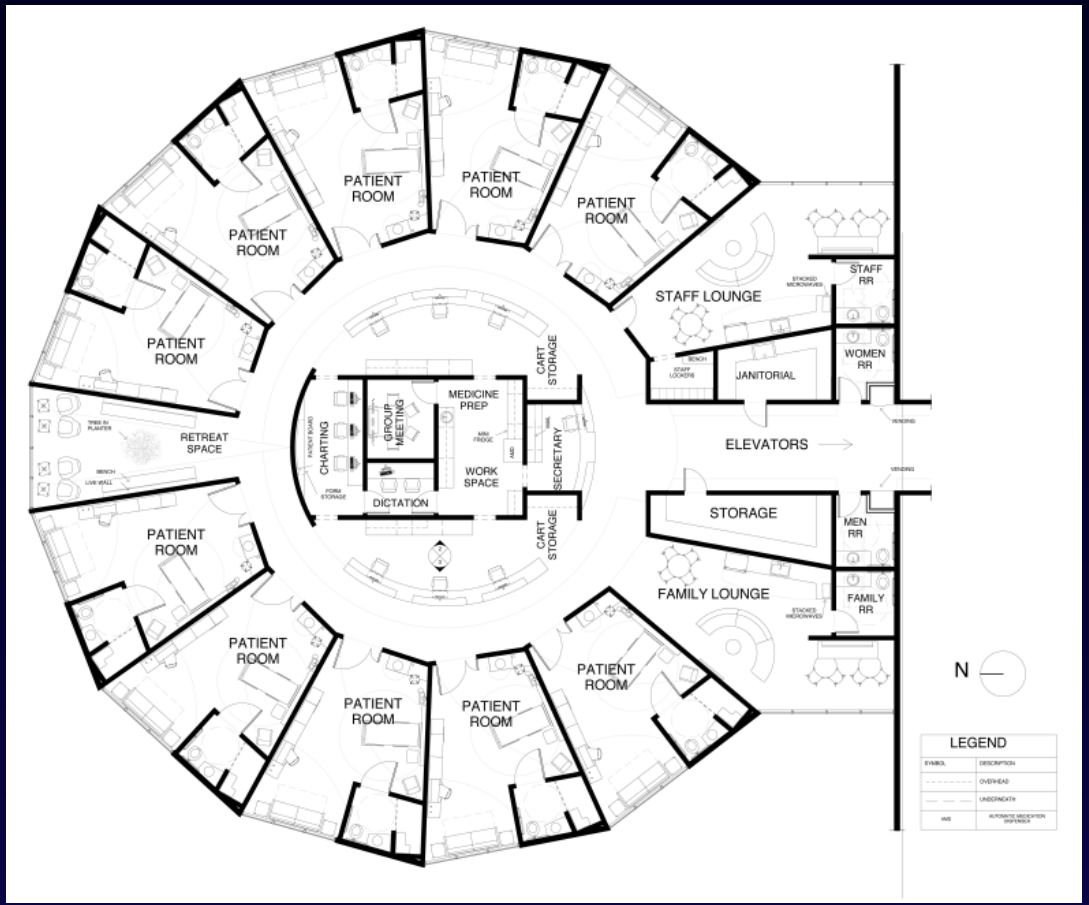
The UVD Disinfection Robot is designed for indoor environmental disinfection. It is equipped with cutting-edge technology including UV-C germicidal lamps and an autonomous navigation system. It's currently used to fight against a variety of targeted microorganisms that contaminate environmental surfaces.

The solution includes:

1 UVD Robot Model C,
1 Tablet,
1 Tablet Holder,
1 UVC Tower Protection Cover,
1 Flightcase,
1 Manual Charger,
1 Automatic Charging Station (US),
Software
1-year Standard Warranty.

Price: $86,900




PATIENT ROOM
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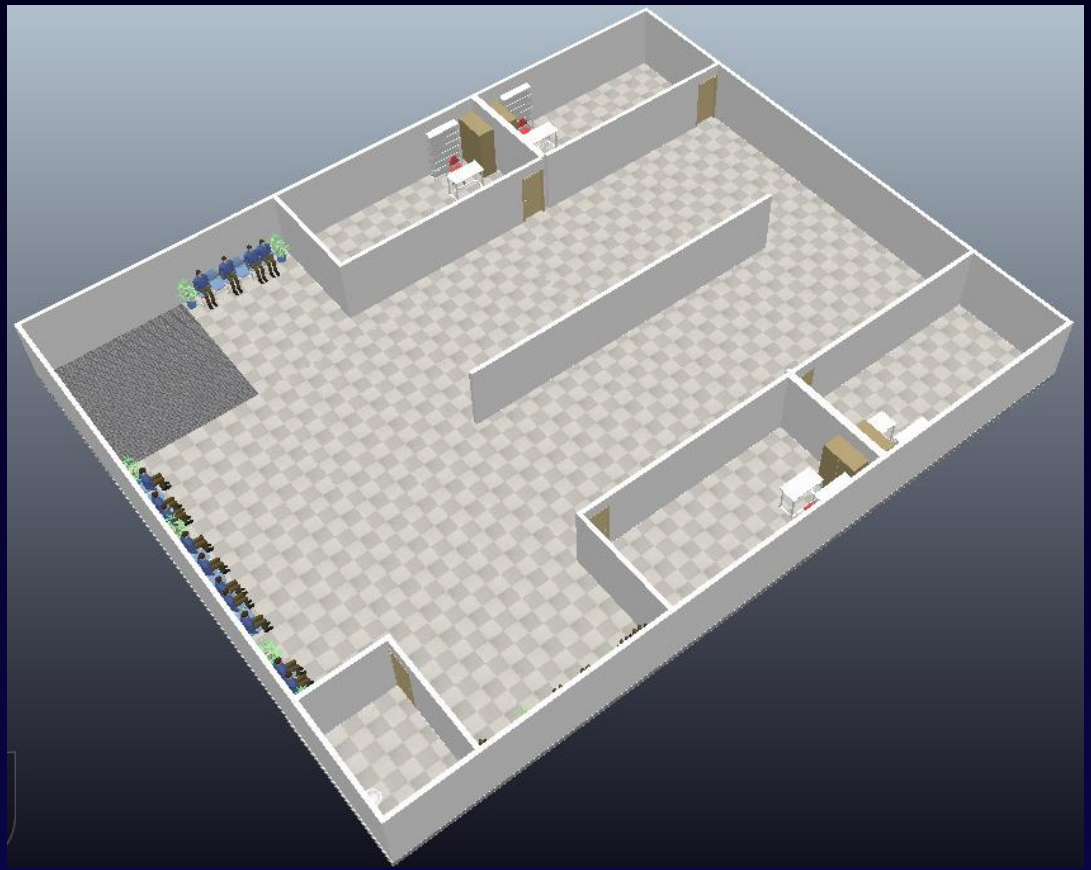
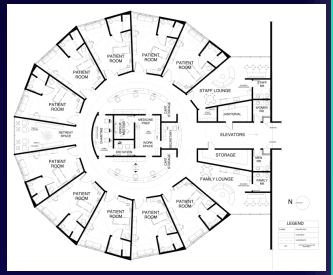
PATIENT ROOM
RETREAT SPACE
CHARTING
GROUP MEETING
MEDICINE PREP
WORK SPACE
DICTATION
SECRETARY
CART STORAGE
CART STORAGE
STAFF LOUNGE
STAFF RR
WOMEN RR
JANITORIAL
ELEVATORS
STORAGE
MEN RR
FAMILY LOUNGE
FAMILY RR
N
LEGEND

02
Research Journey





Benefits of UV-C technology

Defeats micro-organisms

Proven effective against viruses, bacteria, molds and spores.

Protects against micro-organism growth

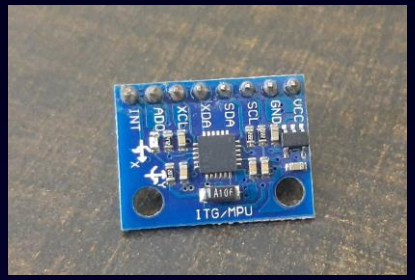
Keeps the surface of water reservoirs clean from biofilm. Keeps air treatment systems clean.

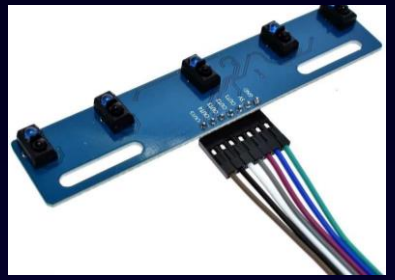
Reliable disinfection

Disinfection effect is directly related to UV dose (intensity and exposure time of micro-organisms). It's simple to measure effectiveness once system design is validated.

Easy and cost-effective

UV-C installations have low capital and operation costs and are easy to operate and maintain.





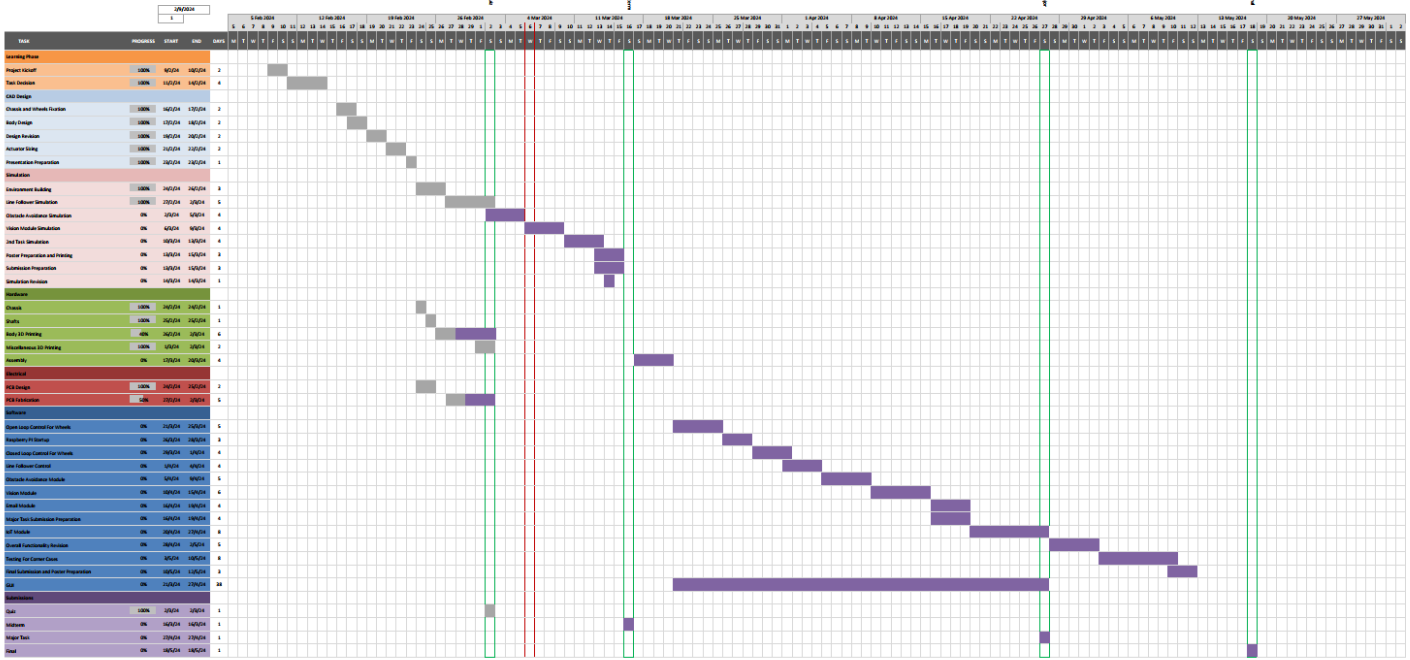
	IMU (Inertial Measurement Unit)	Line Follower Module
Pros	• Provides comprehensive data on motion, including acceleration and rotation, essential for navigation and motion tracking in 3D space.	• Simple to implement and understand. • Highly effective for tasks that require following a predetermined path.
Cons	• More complex and can be more expensive than simpler sensors. • Requires processing of data to be useful in applications.	• Limited in scope to detecting and following lines. • Does not provide information about orientation, position in space, or acceleration.

03

Project Plan

Project Gantt Chart

03
Project Plan



03

Project Plan

TASK	PROGRESS	START	END	DAYS
Learning Phase				
Project Kickoff	100%	9/2/24	10/2/24	2
Task Decision	100%	11/2/24	14/2/24	4

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Project Plan

CAD Design				
Chassis and Wheels Fixation	100%	16/2/24	17/2/24	2
Body Design	100%	17/2/24	18/2/24	2
Design Revision	100%	19/2/24	20/2/24	2
Actuator Sizing	100%	21/2/24	22/2/24	2
Presentation Preparation	100%	23/2/24	23/2/24	1

03
Project Plan

Simulation				
Environment Building	100%	24/2/24	26/2/24	3
Line Follower Simulation	100%	27/2/24	2/3/24	5
Obstacle Avoidance Simulation	0%	2/3/24	5/3/24	4
Vision Module Simulation	0%	6/3/24	9/3/24	4
2nd Task Simulation	0%	10/3/24	13/3/24	4
Poster Preparation and Printing	0%	13/3/24	15/3/24	3
Submission Preparation	0%	13/3/24	15/3/24	3
Simulation Revision	0%	14/3/24	14/3/24	1

03
Project Plan

Hardware				
Chassis	100%	24/2/24	24/2/24	1
Shafts	100%	25/2/24	25/2/24	1
Body 3D Printing	40%	26/2/24	2/3/24	6
Miscellaneous 3D Printing	100%	1/3/24	2/3/24	2
Assembly	0%	17/3/24	20/3/24	4

03
Project Plan

Electrical				
PCB Design	100%	24/2/24	25/2/24	2
PCB Fabrication	50%	27/2/24	2/3/24	5

03
Project Plan

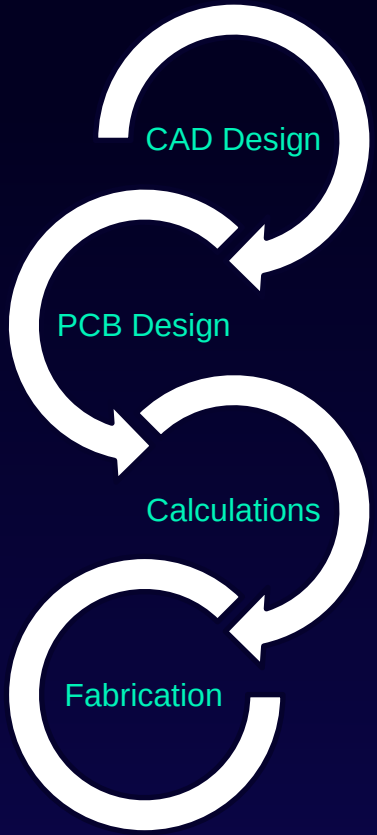
Software				
Open Loop Control For Wheels	0%	21/3/24	25/3/24	5
Raspberry PI Startup	0%	26/3/24	28/3/24	3
Closed Loop Control For Wheels	0%	29/3/24	1/4/24	4
Line Follower Control	0%	1/4/24	4/4/24	4
Obstacle Avoidance Module	0%	5/4/24	9/4/24	5
Vision Module	0%	10/4/24	15/4/24	6
Email Module	0%	16/4/24	19/4/24	4
Major Task Submission Preparation	0%	16/4/24	19/4/24	4
IoT Module	0%	20/4/24	27/4/24	8
Overall Functionality Revision	0%	28/4/24	2/5/24	5
Testing For Corner Cases	0%	3/5/24	10/5/24	8
Final Submission and Poster Preparation	0%	10/5/24	12/5/24	3
GUI	0%	21/3/24	27/4/24	38

04

Development Journey

04

Development Journey

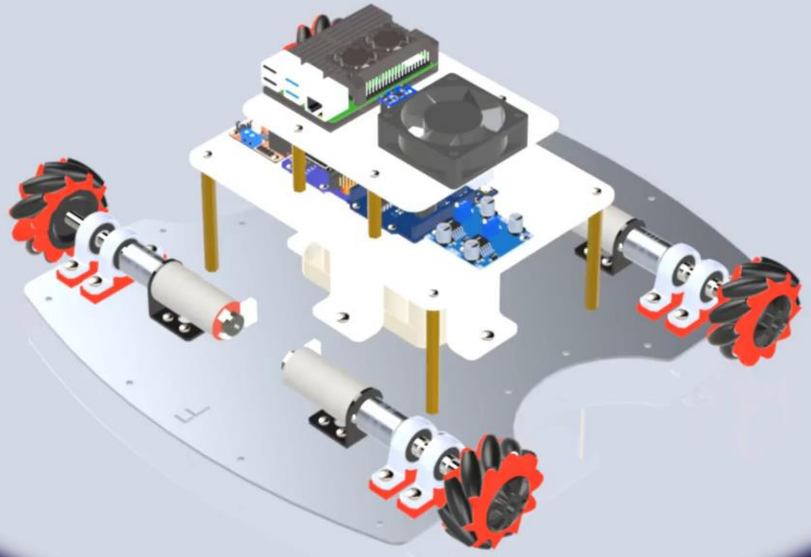


CAD
Design

04
Development
Journey

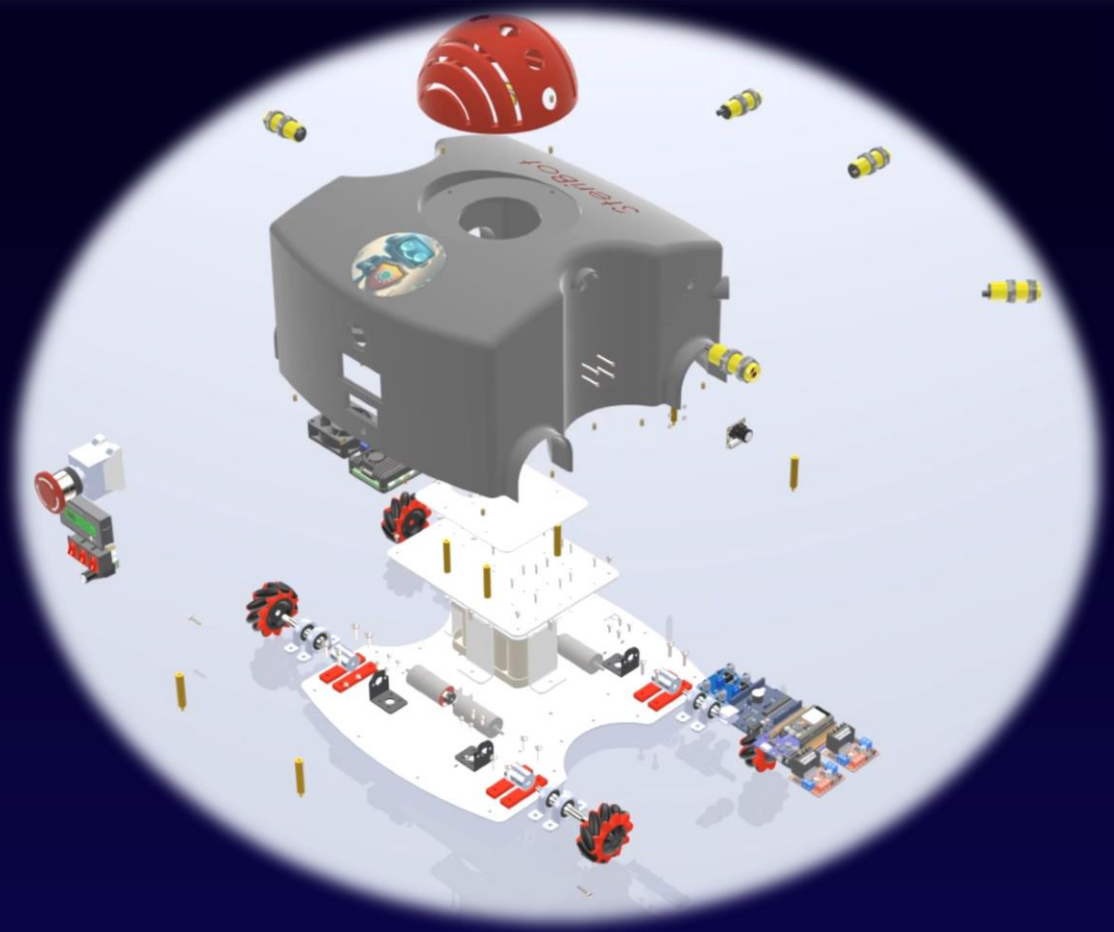
CAD
Design

04
Development
Journey



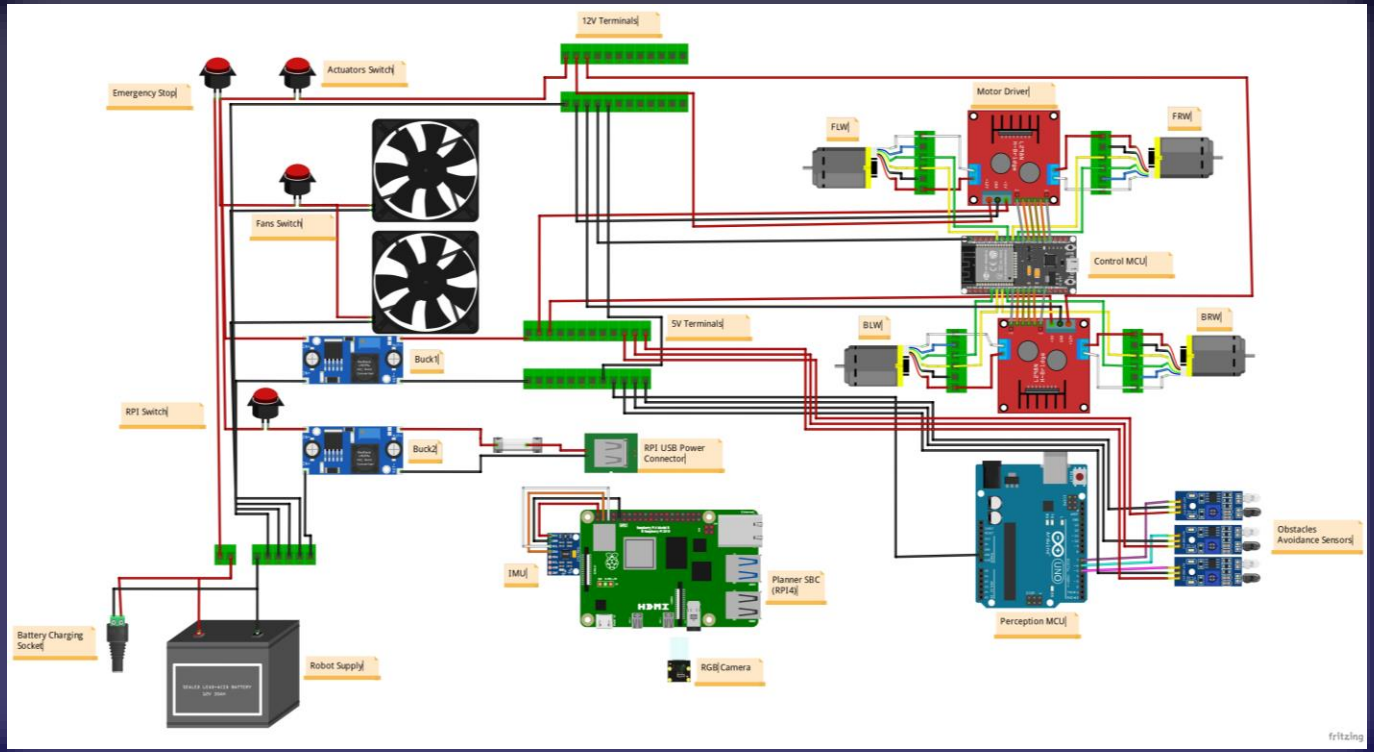
CAD
Design

04
Development
Journey



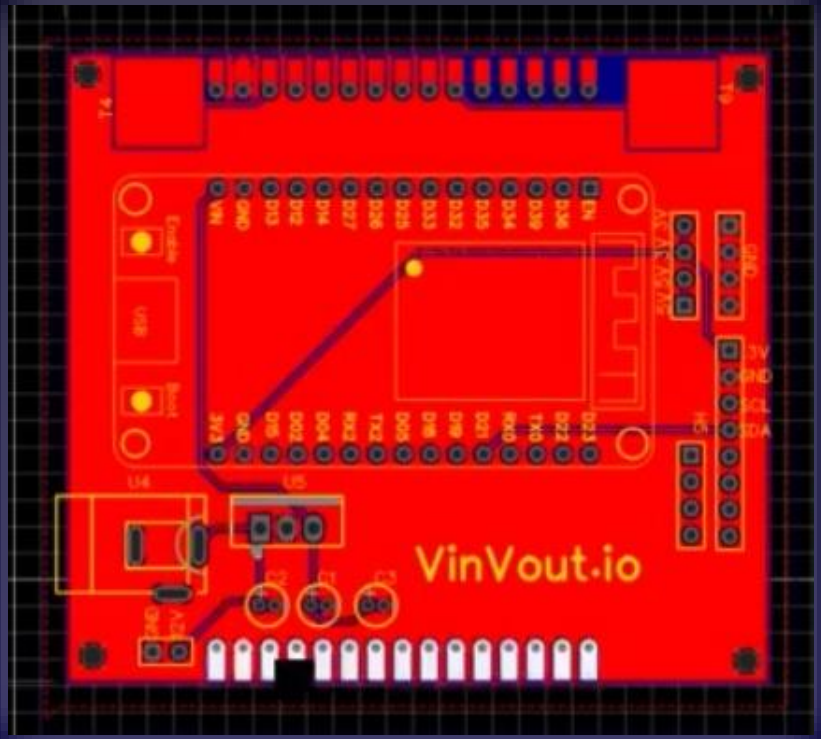
PCB Design

04
Development Journey



PCB
Design

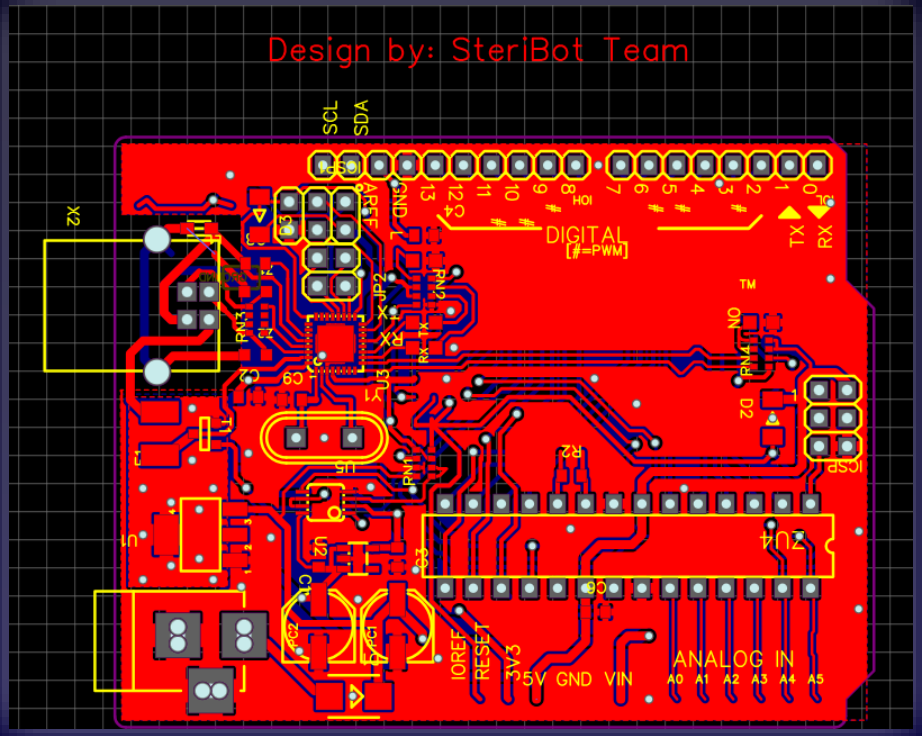
ESP
BREAKOUT



04
Development
Journey

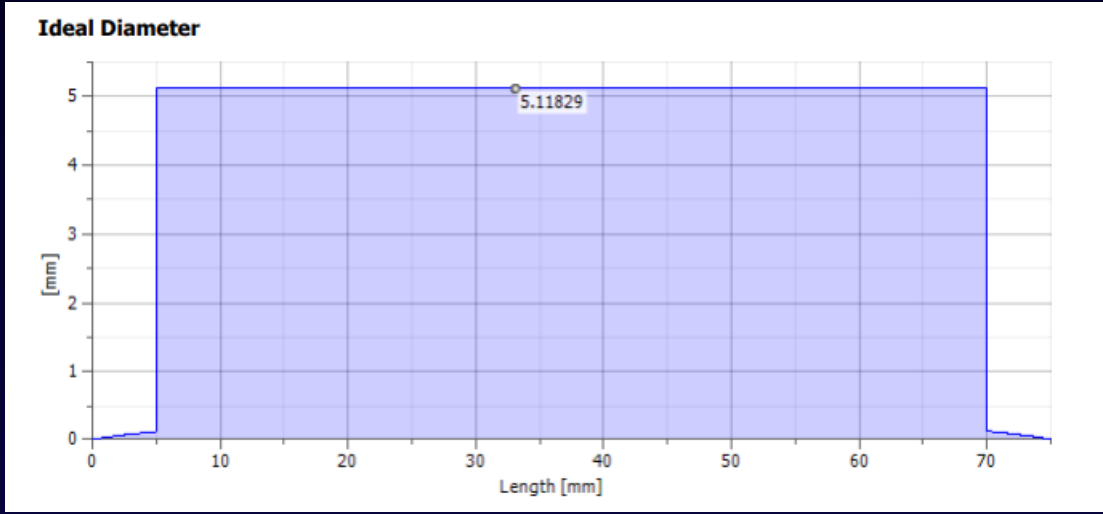
PCB
Design

MCU Layout



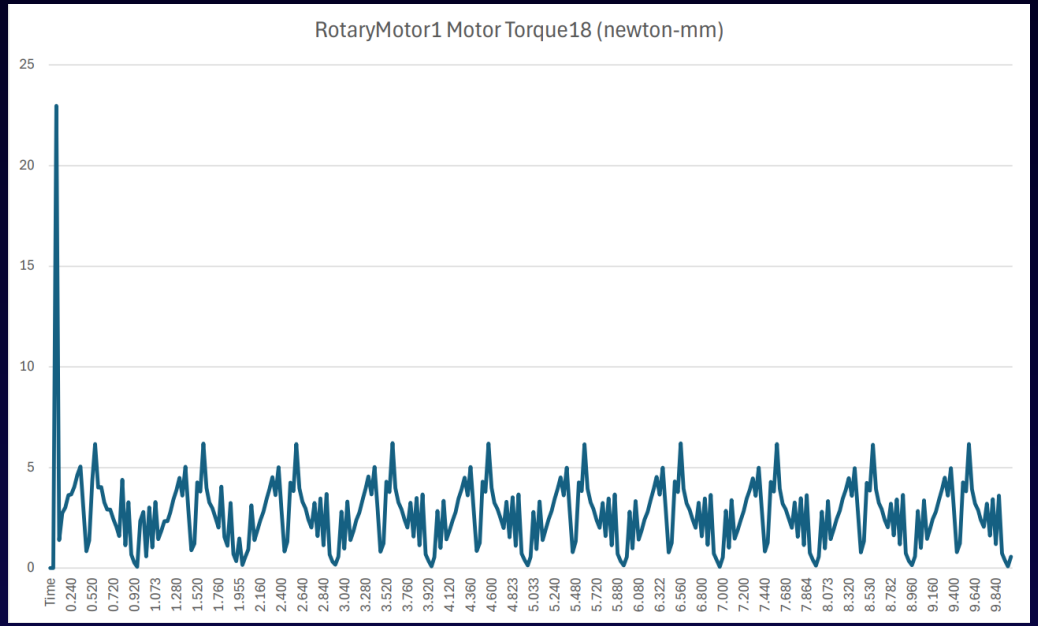
04
Development
Journey

Wheel Shaft

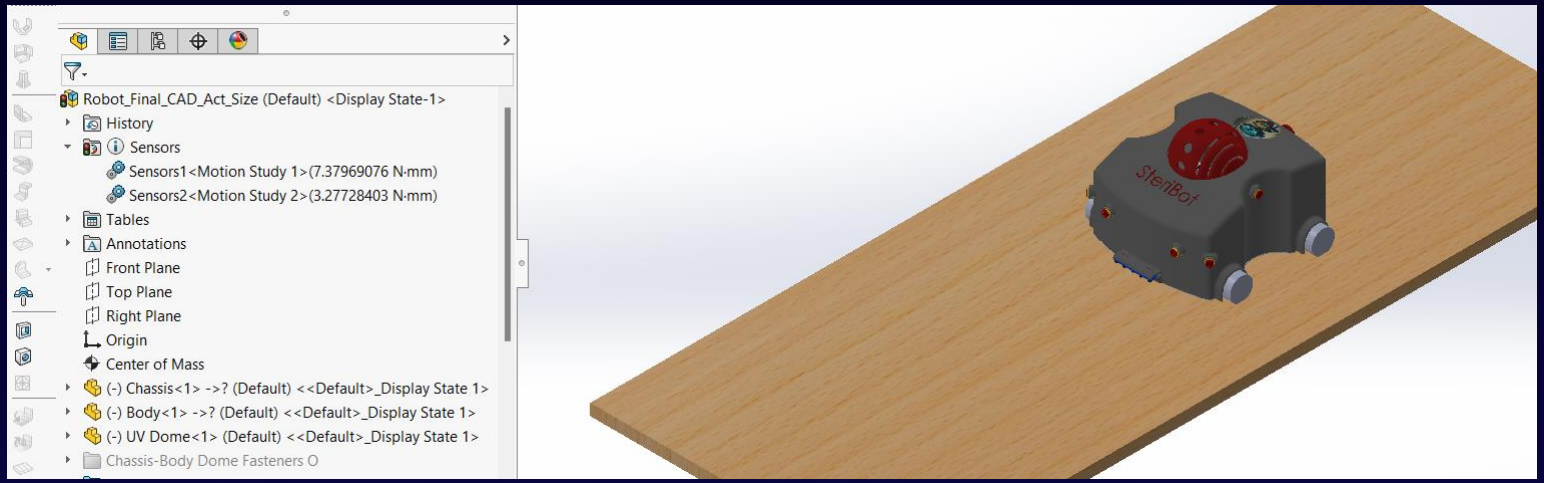


A shaft with Φ8 is selected for the critical area

Actuator Sizing



Actuator Sizing



DC Motors of torque = 7.8Kg.cm are selected

For Roll, Bearings, and Chassis Calculations please scan this QR Code

04

Development Journey

Fabrication







05

Conclusion

Product Cost

PROJECT COST		
CATEGORY #	CATGEORY NAME	COST
1	Mechanical	£2,040.00
2	Electrical	£2,775.00
3	Actuators	£1,600.00
4	Controllers	£4,500.00
5	Miscellaneous	£0.00
6		£0.00
7		£0.00
8		£0.00
9		£0.00
10		£0.00
TOTAL		£10,915.00
Member Contribution		£1,819.17

Detailed Costing

MECHANICAL COMPONENTS				
ITEM NO	ITEM NAME	COUNT	PRICE / EACH	PRICE
1	AL Sheet Metal 2mm	1	£400.00	£400.00
2	Coupler 4-6.35	4	£50.00	£200.00
3	3D printed Motor holders	4	£25.00	£100.00
4	Omni-Wheels Kit	1	£560.00	£560.00
5	KP08 Bearings	8	£60.00	£480.00
6	Chassis Lasser Cut	1	£200.00	£200.00
7	PCB Holders	1	£100.00	£100.00
8				£0.00
9				£0.00
10				£0.00
TOTAL				£2,040.00

Detailed Costing

ELECTRICAL				
ITEM NO	**ITEM NAME**	**COUNT**	**PRICE / EACH**	**PRICE**
1	Raspberry Pi Dual Fans 5Vdc With Heatsink Cooling System	1	£275.00	£275.00
2	LY6W Battery Capacity Indicator	1	£350.00	£350.00
3	RPI Camera 5MP	1	£385.00	£385.00
4	Kill Switch	1	£80.00	£80.00
5	Motor Driver	2	£130.00	£260.00
6	Ultrasonic Sensor	4	£50.00	£200.00
7	Battery 12V 12A	1	£400.00	£400.00
8	UV LED Strip 12V	1	£355.00	£355.00
9	IMU MPU6050	1	£290.00	£290.00
10	Line Follower Module 5 Channels	1	£180.00	£180.00
11				£0.00
TOTAL				£2,775.00

Detailed Costing

ACTUATORS				
ELECTRICAL				
ITEM NO	ITEM NAME	COUNT	PRICE / EACH	PRICE
1	Dc Gear Motor With Magnetic Linear Encoder 25GA370 (7.8KG-210RPM-12V)	4	£400.00	£1,600.00
2				£0.00
3				£0.00
4				£0.00
TOTAL				£1,600.00

Detailed Costing

CONTROLLERS				
ITEM NO	ITEM NAME	COUNT	PRICE / EACH	PRICE
1	RPI4 4GB	1	£4,000.00	£4,000.00
2	ESP32 Wrover Module	1	£500.00	£500.00
3				£0.00
4				£0.00
TOTAL				£4,500.00

Extra Details ??

That's It For Today