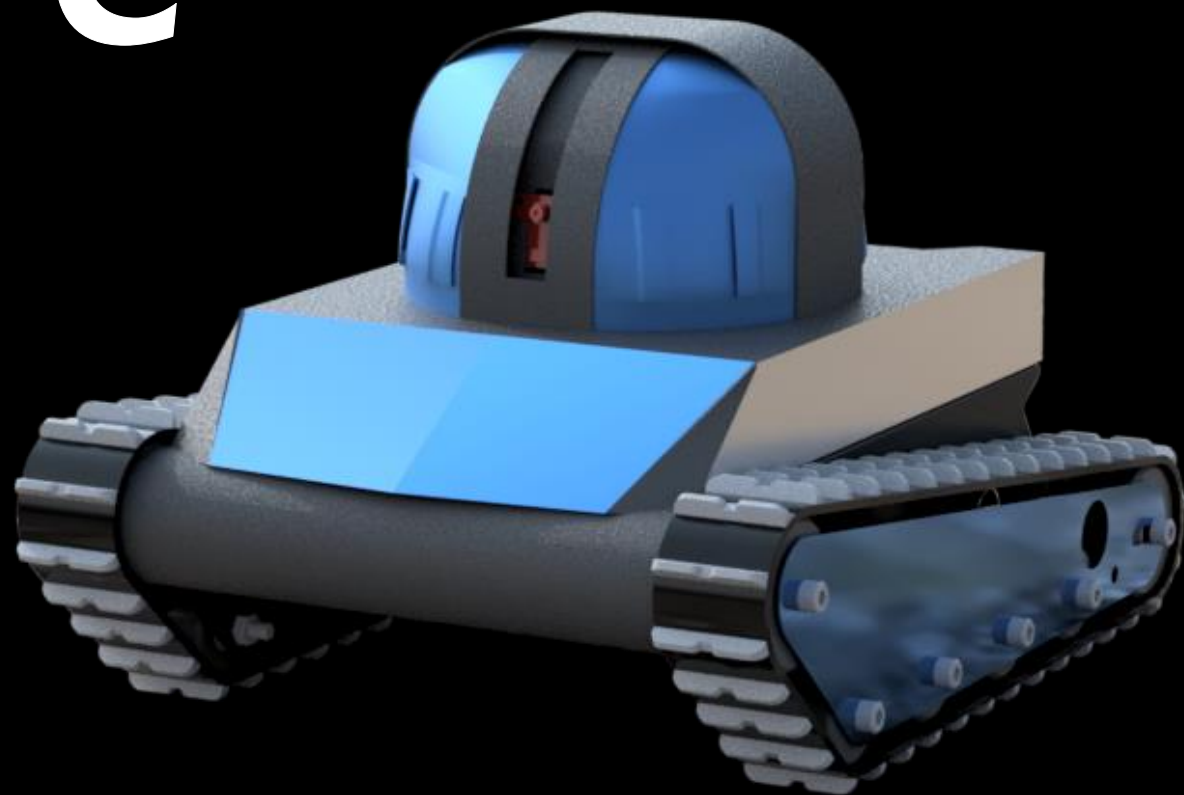# SpySee

Introduction

Our vision is to strengthen out nation through integrating Robotics and Artificial Intelligence tools into our armed forces. Robots are more like cell phones were in 2000's they have just began to impact our lives.

Modern Warfare is greatly fuelled by the accuracy and efficiency of autonomous robots and targeting systems, USA and Israel are leading in this industry, you may have heard of US drones, but still in our armed forces intelligent robots are missing.

Through SpySee we are trying to change this, this robot will make it easier for our armed forces to spy on enemy bases more autonomously and safely.

We have integrated computer vision and deep learning algorithms with a rigid framework to process the data from various sensors so that reconnaissance automation can be achieved.

Features

1. Live Video Feed
2. Object Detection
3. Face Recognition
4. Easy Android Interface
5. Automatic Geo-tagging
6. Video Recording
7. Self Destruct
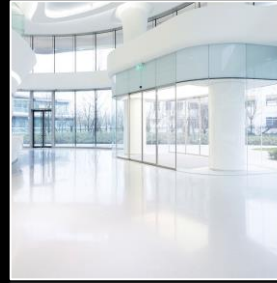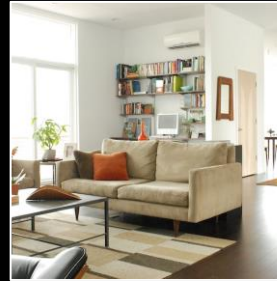
Base Security

Enemy Bases

Border Security

Hostile Situations

Few Applications

Base Security
- Surveillance
- Authorization control
- Security guard
- Remote monitoring
- Video conferencing

Enemy Base Infiltration
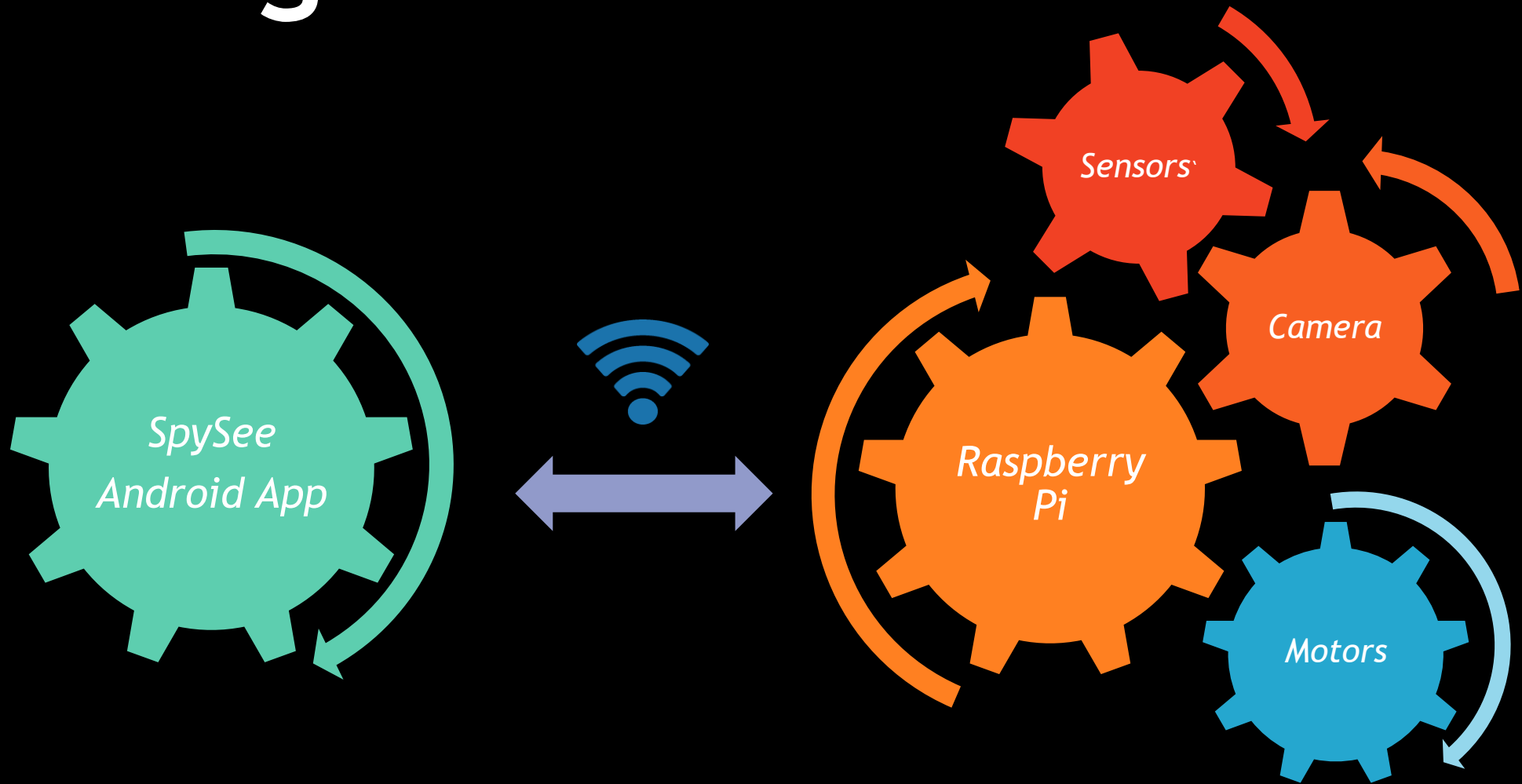- Video documentation
- Person counter
- Suicide Attacker
- Facial recognition

Border Security
- Surveillance
- Infiltration check
- Fence breach detection
- Motion sensing
- Destruct mode

Hostile Scenarios
- Video Feed
- Remote Facial recognition
- Suicide Attacker

Integration

SpySee
Android App

Raspberry
Pi

Sensors

Camera

Motors

Sensors

Camera
- *8 MP camera to stream the video feed to the connected app.*

GPS
- *Real-time position co-ordinates to geotag target objects/ persons.*

Accelerometer
- *For real-time correction of orientation to increase stability.*

PIR
- *Low power Mode for prolonged inactivity or activation time triggering.*

Ultrasonic
- *Near field approximation and to avoider collisions.*

LDR
- *To get the illumination level and to turn ON night lights.*

Prototype Budgets

Premier

- SpySee Android App
- 720p Video Feed
- 8 MP Camera
- Aluminium Chassis
- 16000 mAh Power
- 1 week* ground time
- Low Power Mode

Click to see…
Detailed Budget   Budget Distribution

₹ 15,000

Pro

Premier Features +

- Collision avoider
- Face Recognizer
- Up-to 65 fps Video Feed
- GPS Locator
- Geo-tagging feature

Click to see…
Detailed Budget   Budget Distribution

₹ 21,000

Ultimate

Pro features +

- Carbon Fiber Body
- 32000 mAh Power
- 2 week* ground time
- Object Detector
- Self Destruct Mode
- Personal Counter

Click to see…
Detailed Budget   Budget Distribution

₹ 42,000

Optimum Expense

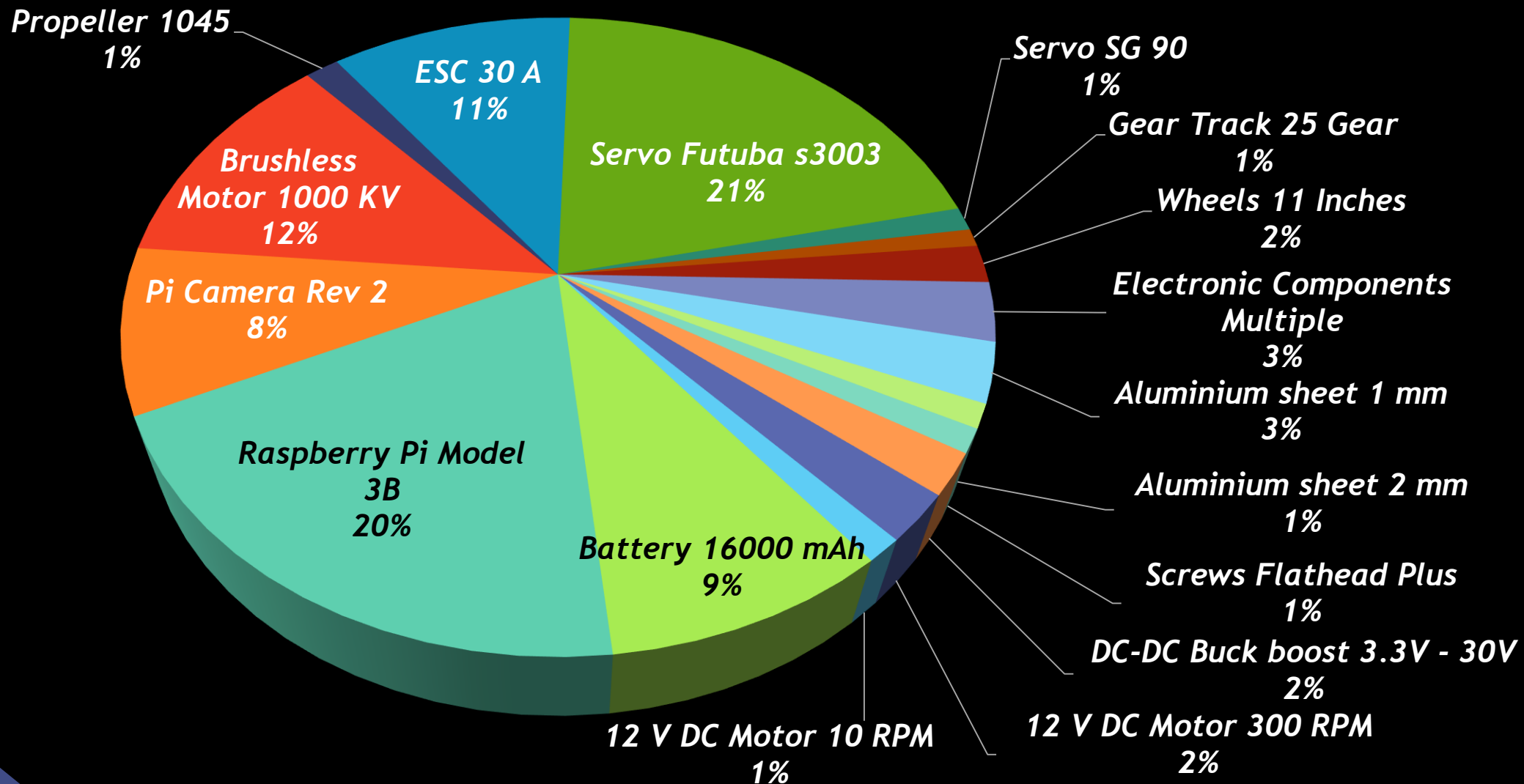| S. No.	Part Name	Description	Price	Quantity	Approx. Price
1	12 V DC Motor	300 RPM	₹ 200	2	₹ 400.00
		10 RPM	₹ 200	1	₹ 200.00
2	Battery	16000 mAh	₹ 1,500	1	₹ 1,500.00
3	Raspberry Pi	Model 3B	₹ 3,300	1	₹ 3,300.00
4	Pi Camera	Rev 2	₹ 1,400	1	₹ 1,400.00
5	Brushless Motor	1000 KV	₹ 500	4	₹ 2,000.00
6	Propeller	1045	₹ 250	1	₹ 250.00
7	ESC	30 A	₹ 450	4	₹ 1,800.00
8	Servo	Futuba s3003	₹ 350	10	₹ 3,500.00
		SG 90	₹ 200	1	₹ 200.00
9	Gear Track	25 Gear	₹ 150	1	₹ 150.00
10	Wheels	11 Inches	₹ 80	4	₹ 320.00
11	Electronic Components	Multiple	₹ 500	1	₹ 500.00
12	Aluminium sheet	1 mm	₹ 500	1	₹ 500.00
		2 mm	₹ 200	1	₹ 200.00
13	Screws	Flathead Plus	₹ 1	400	₹ 200.00
14	DC-DC Buck boost	3.3V - 30V	₹ 350	1	₹ 350.00

| Total | | | | | ₹ 16,770 |

Optimum Distribution

Propeller 1045
1%

ESC 30 A
11%

Servo Futuba s3003
21%

Brushless Motor 1000 KV
12%

Pi Camera Rev 2
8%

Raspberry Pi Model 3B
20%

Battery 16000 mAh
9%

Servo SG 90
1%

Gear Track 25 Gear
1%

Wheels 11 Inches
2%

Electronic Components Multiple
3%

Aluminium sheet 1 mm
3%

Aluminium sheet 2 mm
1%

Screws Flathead Plus
1%

DC-DC Buck boost 3.3V - 30V
2%

12 V DC Motor 300 RPM
2%

12 V DC Motor 10 RPM
1%

Prototype Expense

S. No.	Part Name	Description	Price	Quantity	Approx. Price
1	Optimum Expense	Included Parts	₹ 13,270	1	₹ 13,270.00
2	IR Sensor	Proximity	₹ 150	2	₹ 300.00
3	Servo Motor	MG 995	₹ 450	17	₹ 7,650.00
4	Ultrasonic Sensor	HC SR04	₹ 200	2	₹ 400.00
5	Vacuum Pump	12V 16 psi	₹ 500	4	₹ 2,000.00
6	Solar Panel	12 V	₹ 1,000	1	₹ 1,000.00
7	Electronic Components	Multiple	₹ 500	1	₹ 500.00

Total   **₹ 25,120**
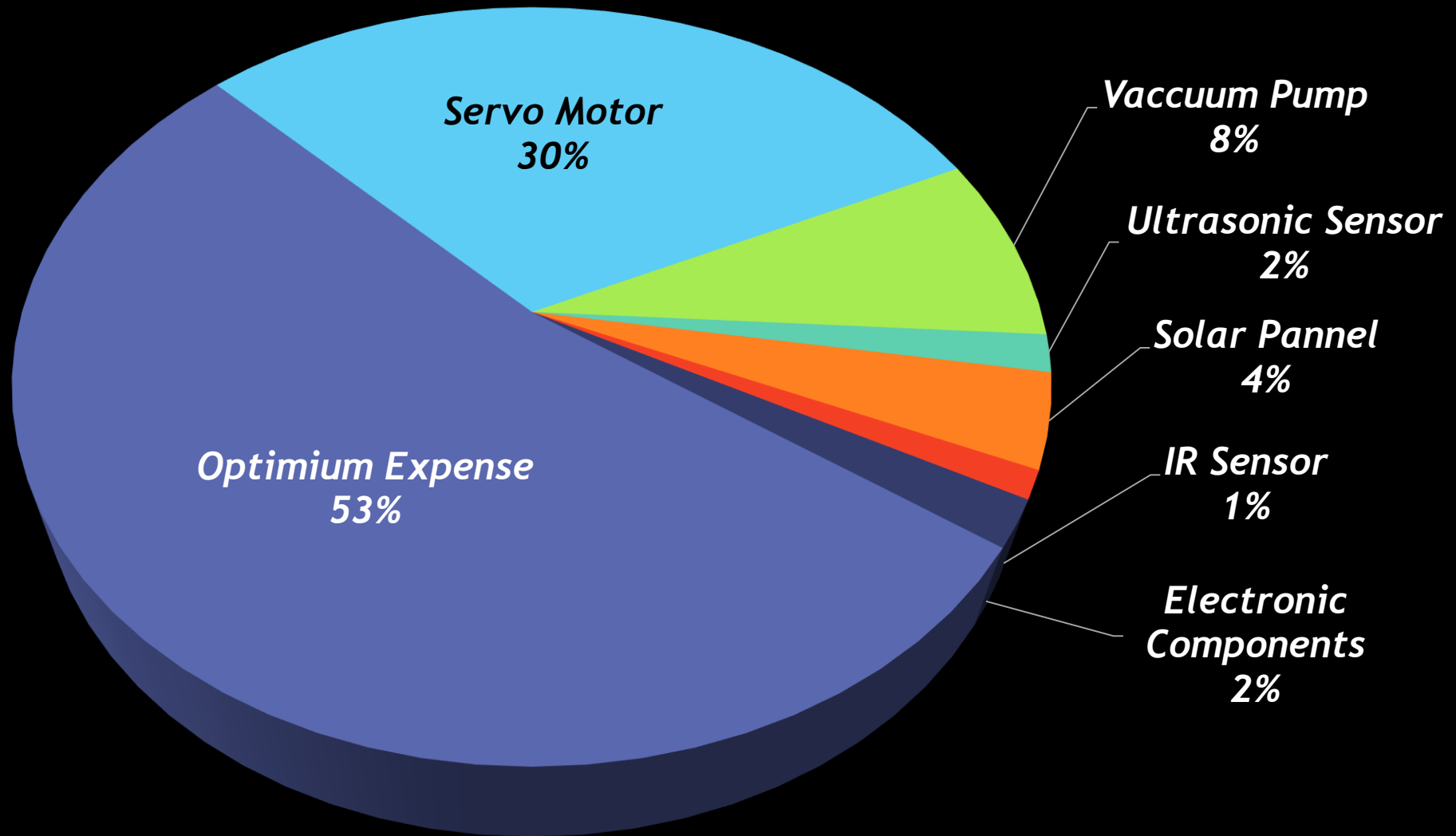
Product Level Expense

S. No.	Part Name	Description	Price	Quantity	Approx. Price
1	Optimum Expense	Included Parts	₹ 11,770	1	₹ 11,770.00
2	IR Sensor	Proximity	₹ 150	2	₹ 300.00
3	Servo Motor	MG 995	₹ 450	17	₹ 7,650.00
4	Ultrasonic Sensor	HC SR04	₹ 200	2	₹ 400.00
5	Vacuum Pump	12 V 16 psi	₹ 500	4	₹ 2,000.00
6	Solar Panel	12 V	₹ 1,000	1	₹ 1,000.00
7	Electronic Components	Multiple	₹ 500	1	₹ 500.00
8	Mecanum Wheels	60 mm	₹ 2,500	2	₹ 5,000.00
9	Carbon Fibre Cloth	36 cm x 91 cm	₹ 2,500	2	₹ 5,000.00
10	Battery	3200 mAh	₹ 1,500	2	₹ 3,000.00
Total					**₹ 36,530**

Product Level Distribution

- Mecanum Wheels 14%
- Carbon Fibre Cloth 14%
- Battery 8%
- Servo Motor 21%
- Vacuum Pump 5%
- Solar Panel 3%
- Ultrasonic Sensor 1%
- IR Sensor 1%
- Optimum Expense 32%
- Electronic Components 1%
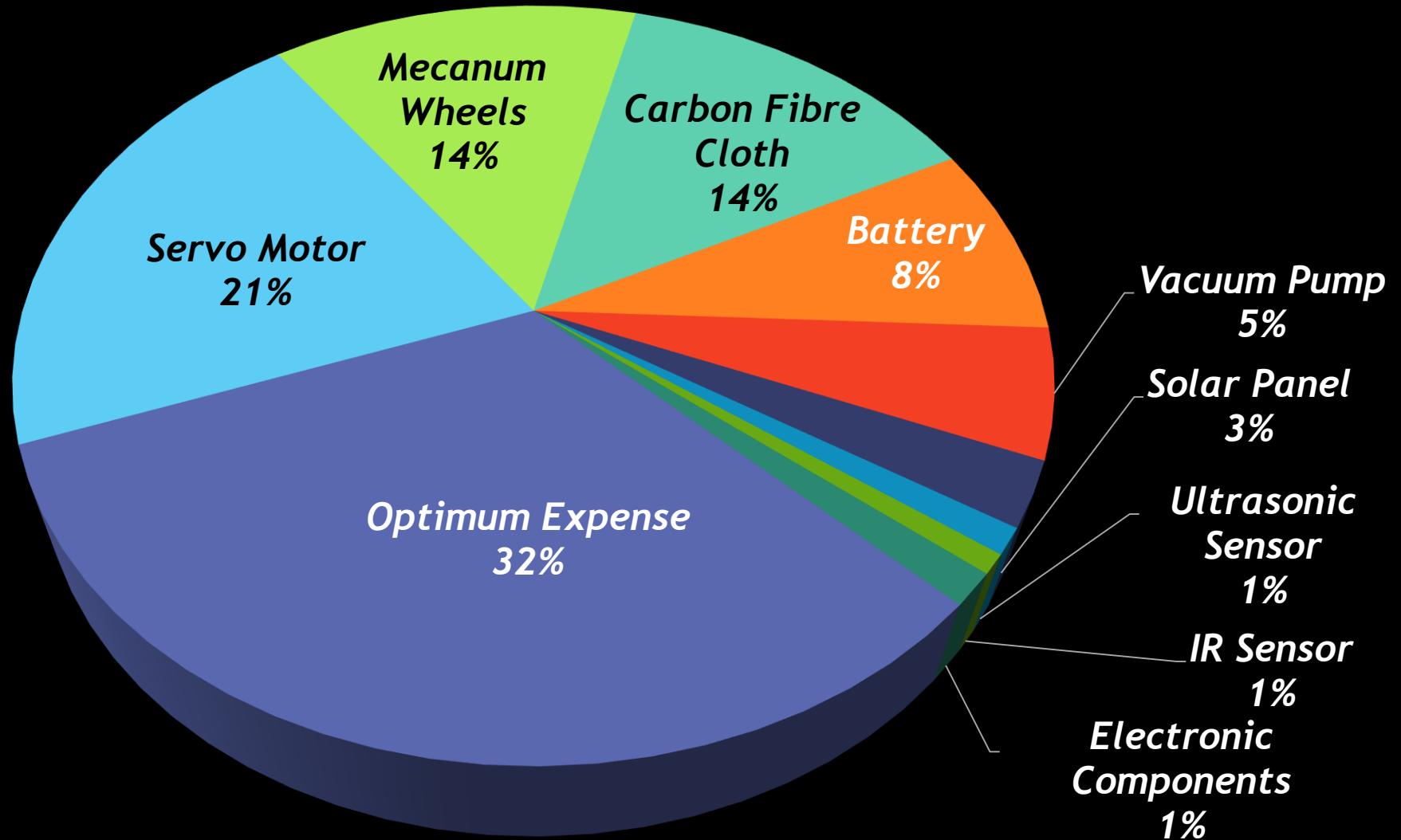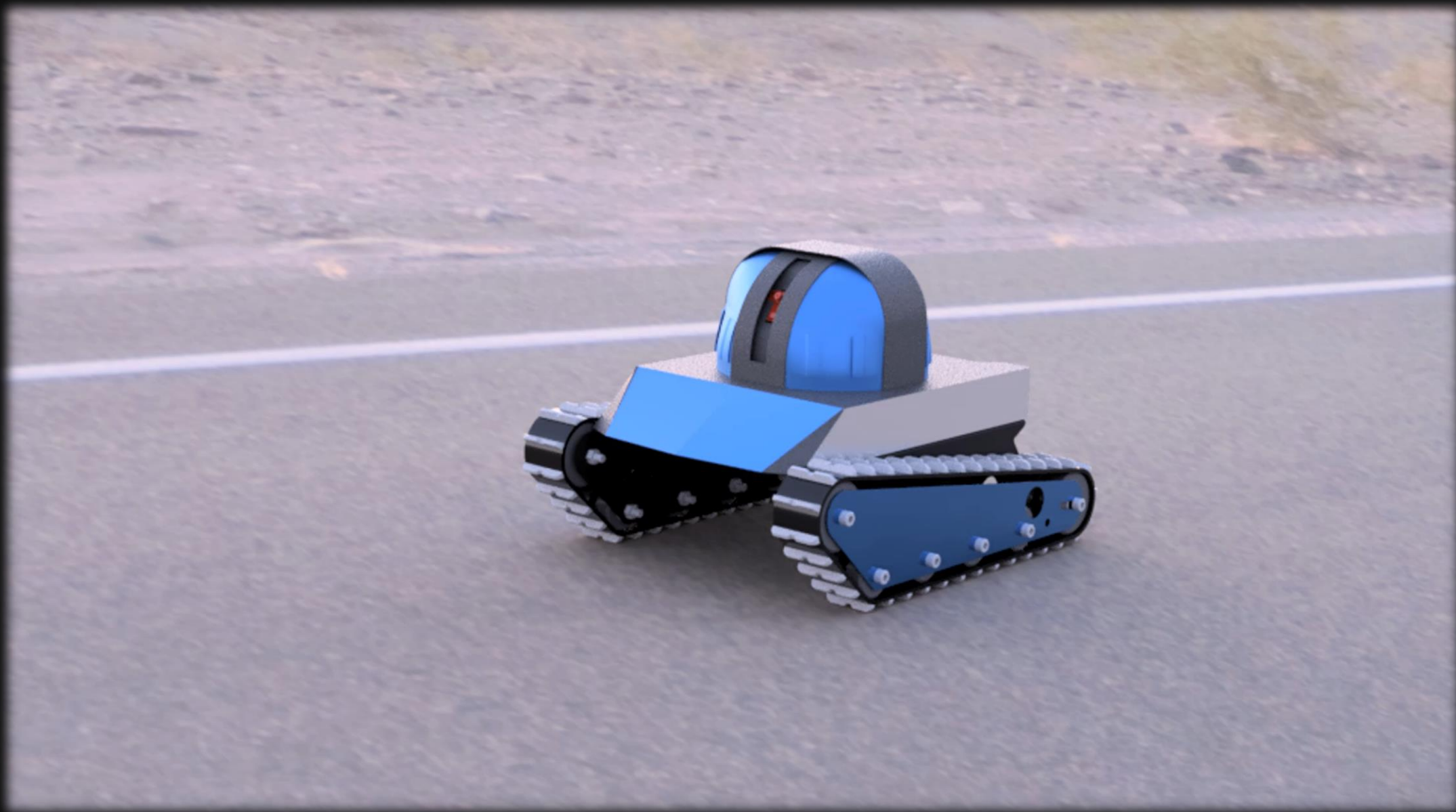
Further Improvements

SpySee currently only works on Wi-Fi and have limited range but it can be modified to support satellite uplink. Its software can be modified as per requirement for any Military Equipment such as tank to be remotely controlled, while designing its software architecture we have tried to make it future ready and it will take no time to modify it for a vehicle if provided the appropriate actuators and drivers.

We are working on SpySee v2.0 which will feature a detachable quadcopter for a better aerial view for surveillance tasks, and features like automatic path mapping of the enemy base and for its autonomous scanning of the assigned hostile sector.
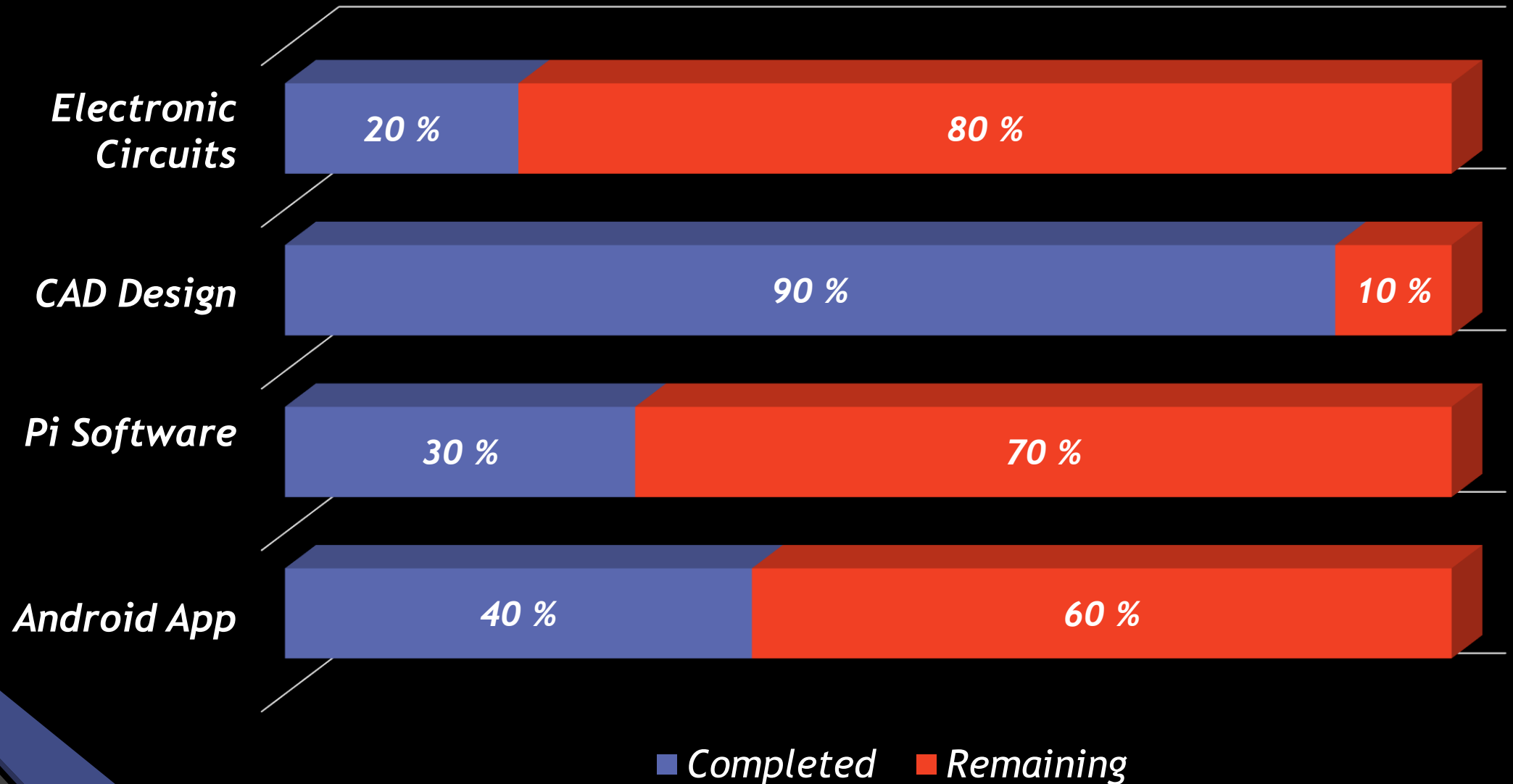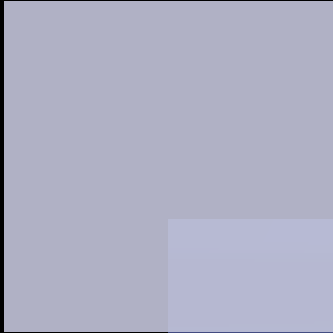
Aerial View

Machine Learning

Our Progress

Electronic Circuits
20 % | 80 %

CAD Design
90 % | 10 %

Pi Software
30 % | 70 %

Android App
40 % | 60 %

■ *Completed*   ■ *Remaining*

Contribution

Anant Singh

CAD Design
Electronic circuits
Android App
Pi side Software
Computer Vision
Machine Learning
Model Manufacture

Contact Information

Anant Singh

Email Id : <u>95anantsingh@gmail.com</u>

LinkedIn: https://www.linkedin.com/in/95anantsingh/