



ANT ROBOT - ULTRA REALISTIC DESIGN

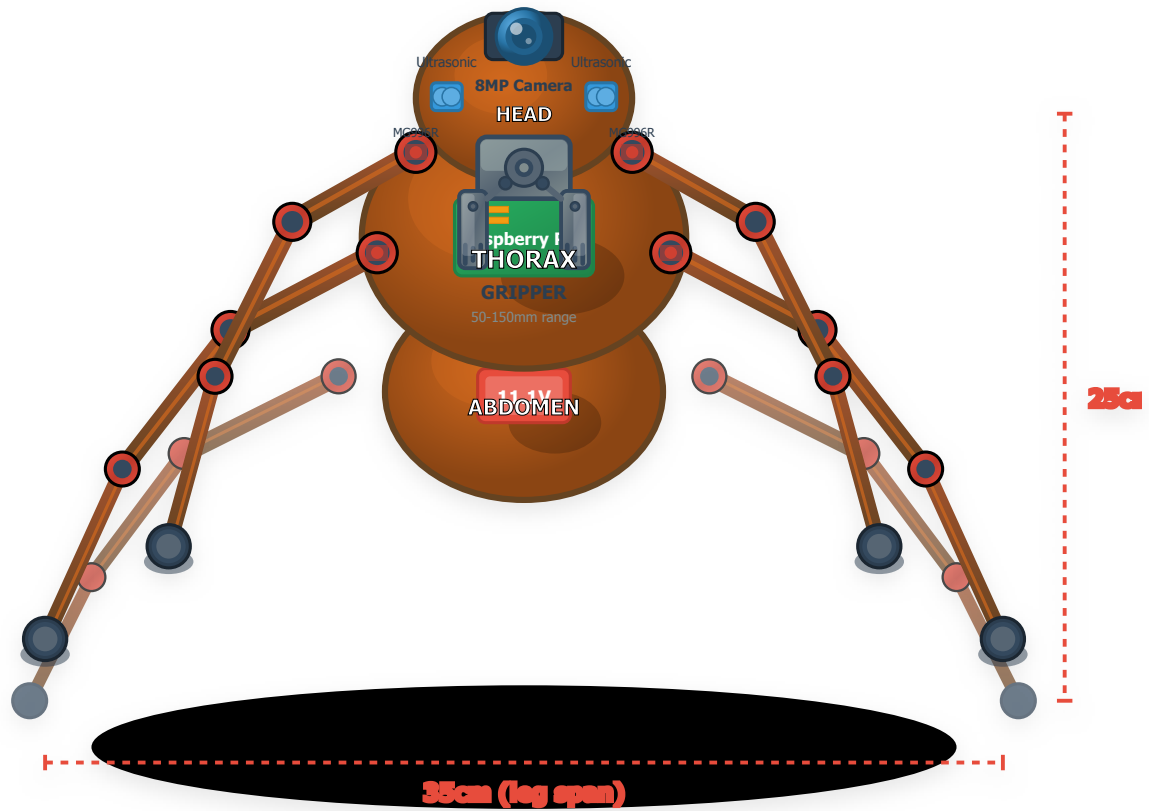
SEN 4821 Robotics Project | Autonomous Waste Collection System

Hexapod Walking Robot with AI Vision & Front-Mounted Gripper

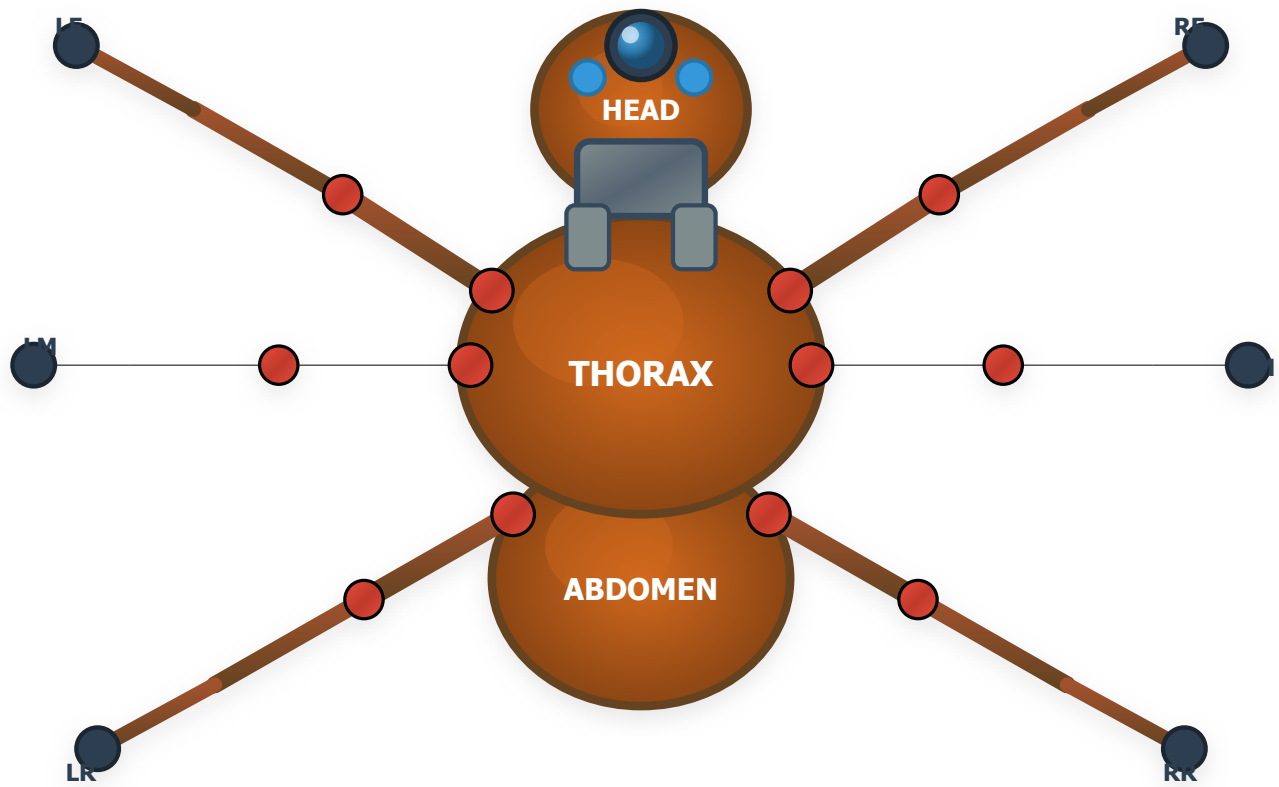


Ultra Realistic 3D Perspective View

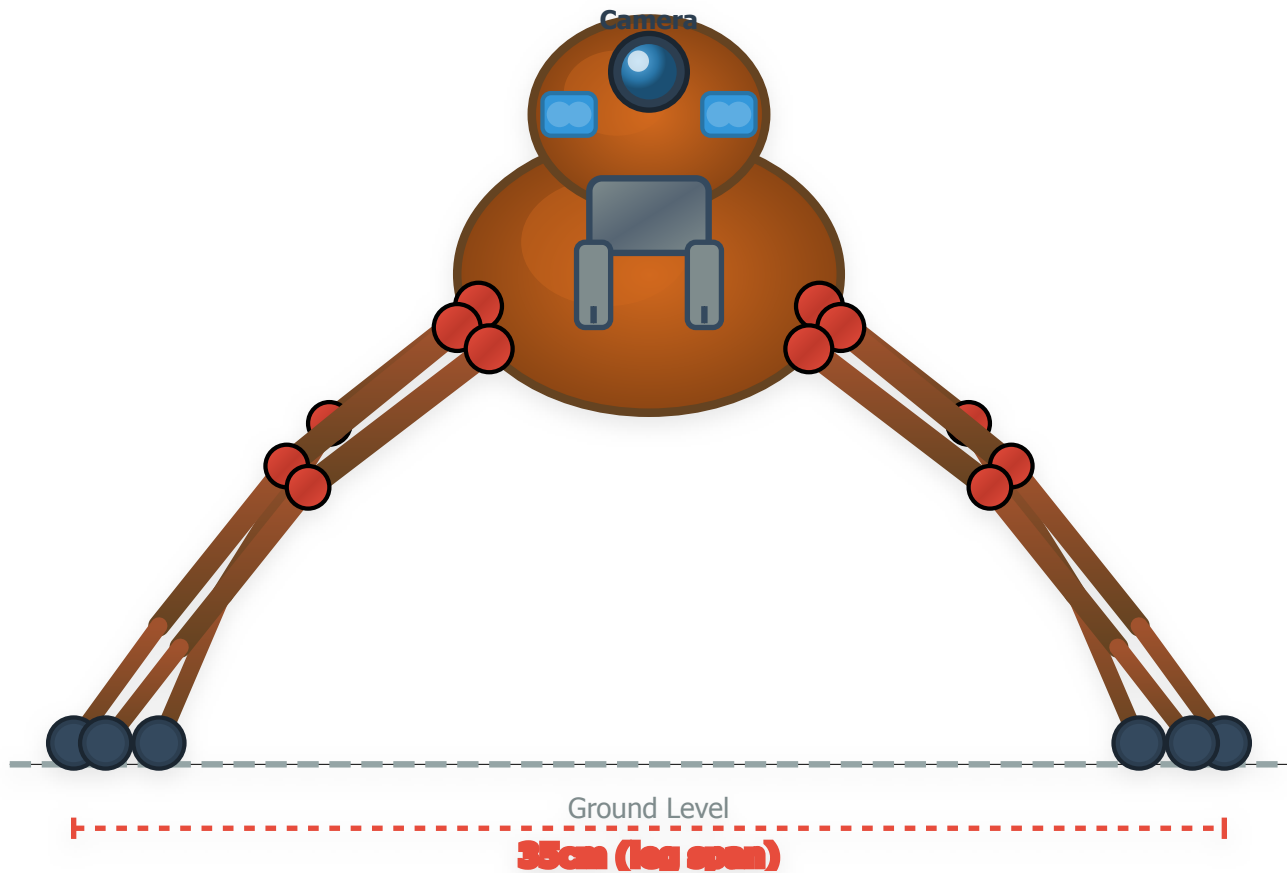
This is how your ant robot will actually look when built. Notice the gripper at the front below the camera!







TOP VIEW



FRONT VIEW



Key Design Features

-  **Front-Mounted Gripper:** Below camera for visual guidance
-  **18 Servo Motors:** 3 per leg × 6 legs for walking
-  **AI Vision System:** 8MP camera with YOLOv5 detection
-  **Hexapod Locomotion:** Stable tripod gait pattern

Technical Specifications

LENGTH
45 cm

WIDTH
35 cm

HEIGHT
25 cm



Autonomous Navigation:
Ultrasonic + IR sensors



45-60min Battery: 11.1V
5000mAh LiPo

WEIGHT

2.5-3.5 kg

SPEED

0.1-0.3 m/s

PAYLOAD

0.5-1 kg

DOF

18 total

AI ACCURACY

>85%



Component Color Guide



Body Segments
(Acrylic/Aluminum)



Leg Segments (Coxa,
Femur, Tibia)



Servo Motors (MG996R -
18x)



Camera Lens (8MP Sony
sensor)



Raspberry Pi (Main



controller)



Gripper (Metal jaws)



Ultrasonic Sensors (HC-SR04)



Rubber Foot Pads
(Traction)

SEN 4821 Robotics Project

Autonomous Waste Collection Ant Robot

Hexapod Walking Design - NO WHEELS

⚡ **GRIPPER POSITIONED AT FRONT** ⚡

Camera sees waste → Robot approaches → Gripper picks up → Autonomous disposal