



SCOPE

Senior Consulting Program for Engineering

Olin College



OLIN STUDENTS: Stan Antol, James Bauer, Anne Bowlby, Yiyang Li, Katherine Terracciano, and Zim Zimmerman

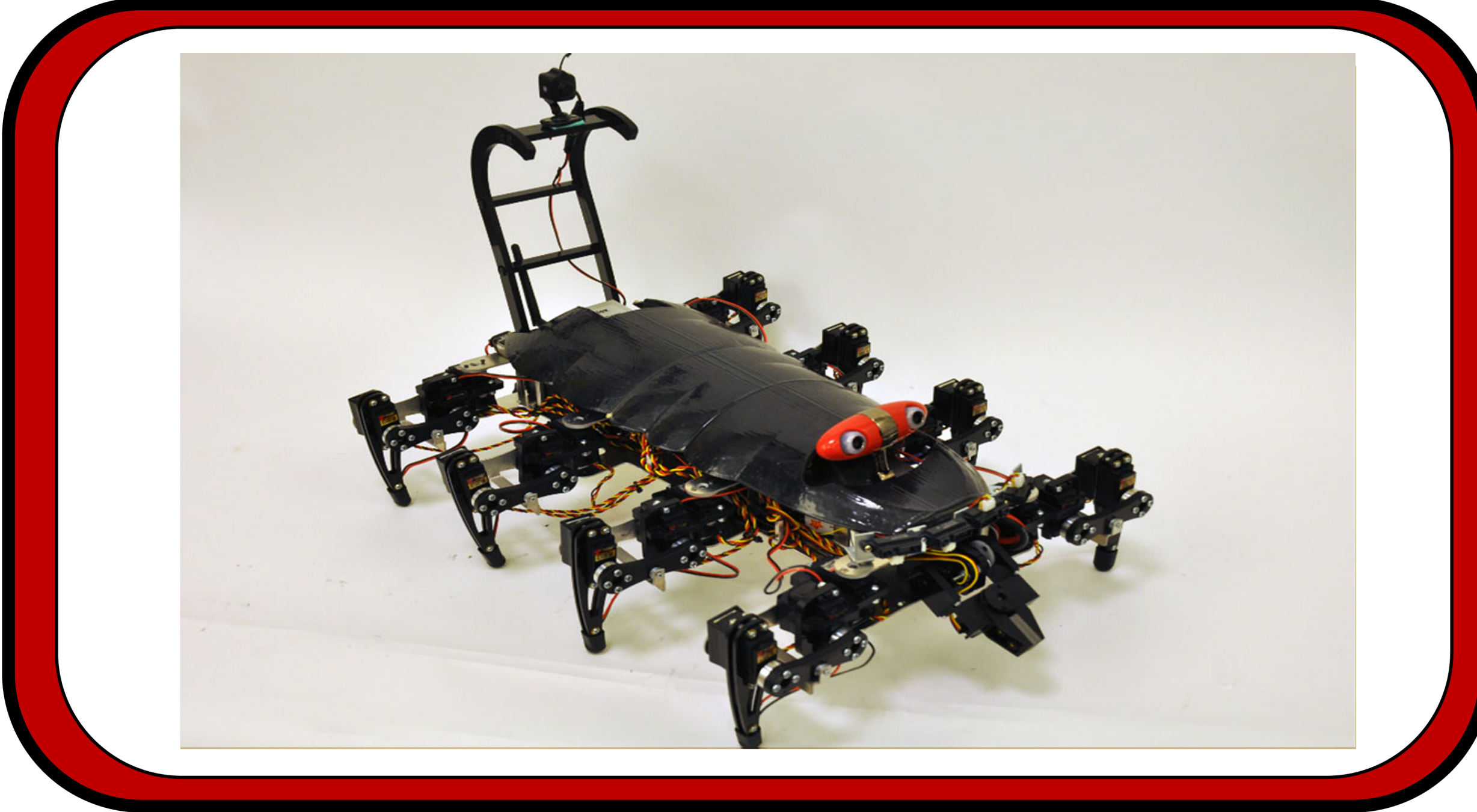


DEVELOPING AN AUTONOMOUS WALKING ROBOT

ADVISOR:
Chris Lee

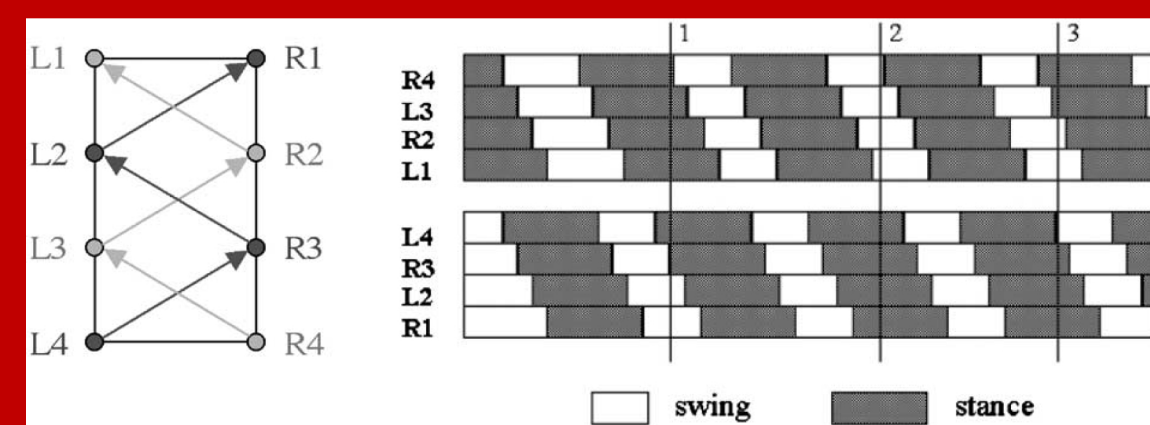
SPONSOR LIAISON:
John Fox

MISSION: The Parietal Systems' SCOPE team designed and fabricated an eight-legged scorpion-inspired robot. This robotic platform will be used to demonstrate PSI's advanced sensor processing algorithms. There are a variety of sensors onboard which allow it to avoid obstacles and autonomously navigate towards a specified target. Sensor data, such as video feed and GPS, is wirelessly transmitted back to the workstation for further processing and control.



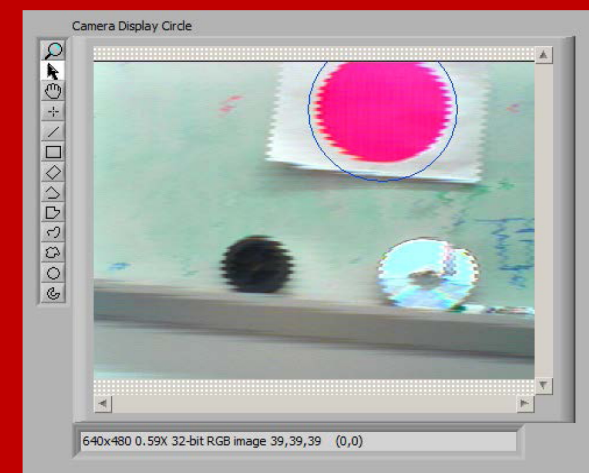
FINAL DEMO: The robot will search the environment for the target: a red circle. Once found, it will walk in a straight line towards the target. If an obstacle is detected in its path, the robot will follow a designated sidestepping response to walk around the obstacle. Once the obstacle is cleared, the robot will search for the circle-target once again and continue walking towards it. The robot will stop once it reaches the target.

SCORPION-INSPIRED WALKING GAIT

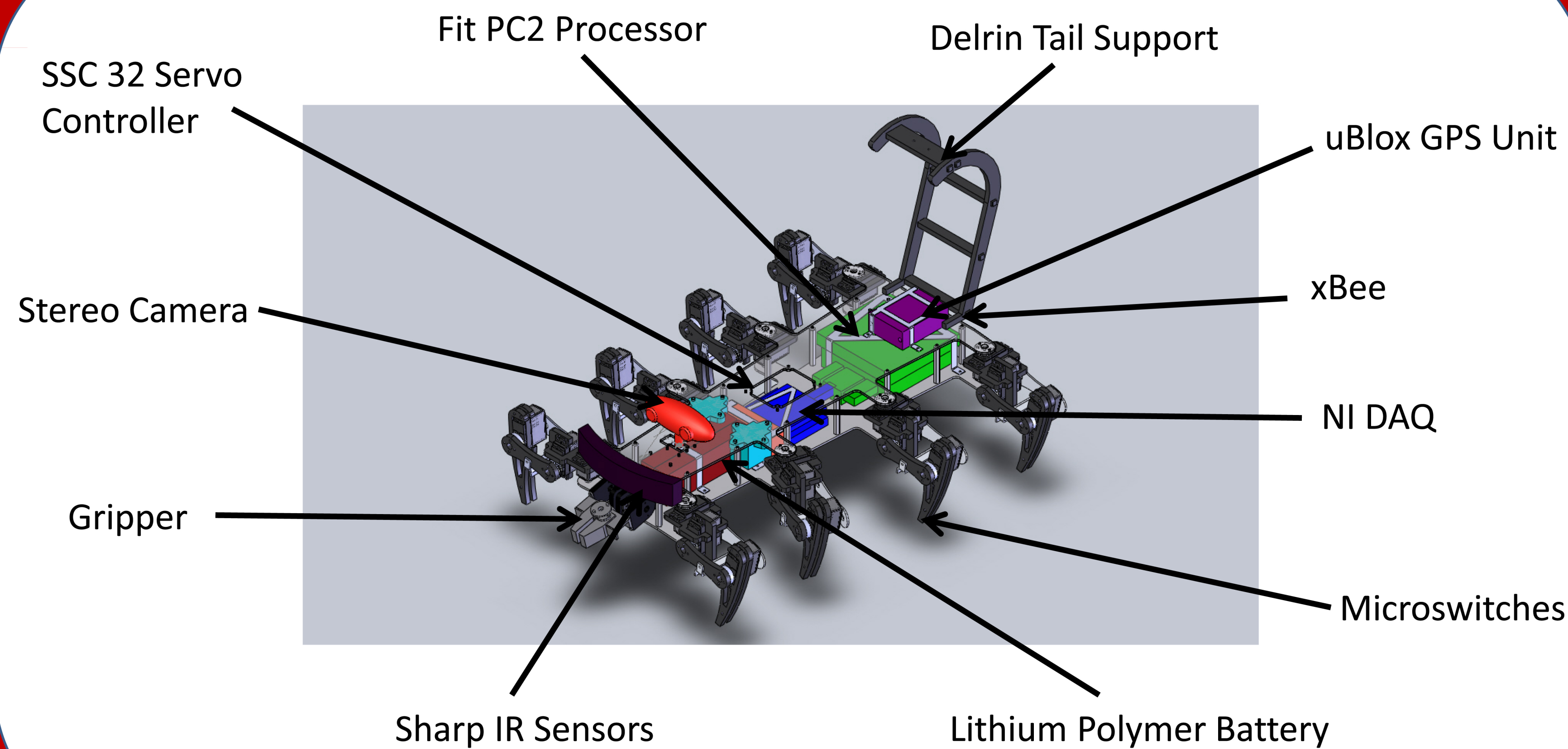
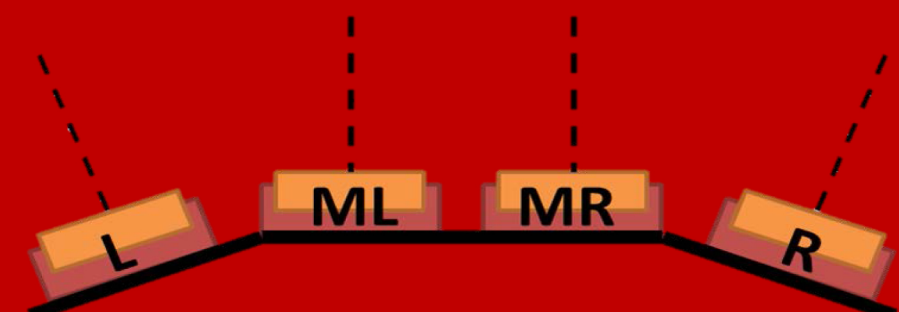


CIRCLE-TARGET RECOGNITION

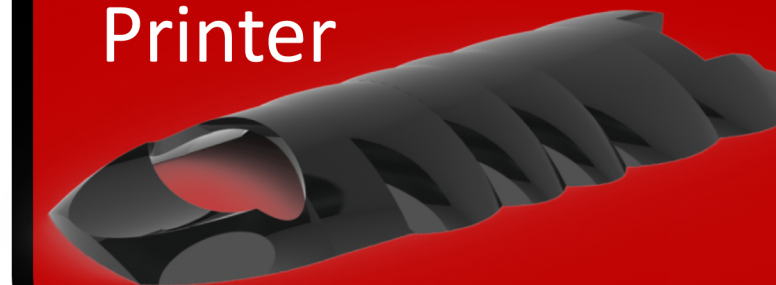
Mini Security Wireless Camera



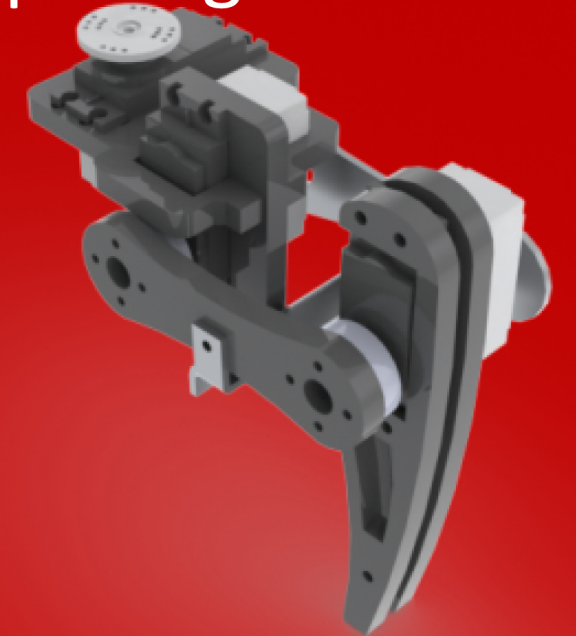
SHARP IR SENSORS:
Used to Detect Obstacles



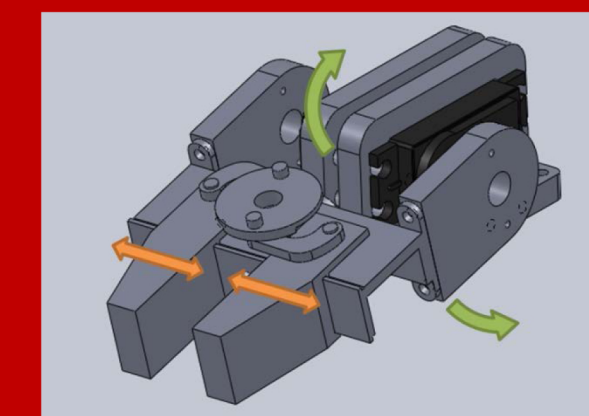
SHELL: FDM 3D Printer



LEG: Used three Hitec Servo Motors per leg



GRIPPER



BODY: Scorpion-inspired tapered frame

