DEVELOPING AN AUTONOMOUS WALKING ROBOT

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

SHARP IR SENSORS: Used to Detect Obstacles

- Mini Security Wireless Camera
- Sharp IR Sensors

GOAL: The robot will search for 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.

SHELL: FDM 3D Printer

LEG: Used three Hitec Servo Motors per leg

GRIPPER

BODY: Scorpion-inspired tapered frame