

Challenge #4: Steering the Car

Your Task: create a system that will allow you to steer the car in a straight line down a hallway using the ranging sensors, electronic speed control, and steering servos of the vehicle. "Straight line" means with oscillations are within ± 1 epsilon where epsilon = 50cm. We will evaluate the crawlers on the PHO 4th floor.

Deliverables: Presentation summarizing design decisions, architecture and data flow of solution, demonstration of solution.

Learning objectives: learn how to achieve actuation with networked devices; servo control, use rangefinder devices, learn limitations of networked control loops, sensors, and actuators.

Relevant Modules – what we need to make this happen?

1. Feedback control
2. Control with latency
3. Sensor hardware specifications
4. Actuator control specifications/servos
5. Real-time programming/operating systems

Note: control algorithms that implement some form of PID control will be more highly ranked.

