Sensor Report

Brad Mouring
Special Sensors

- Devantech SRF10
- D-Link DCS900
SRF10 Sonar Range Finder

- **Pros**
  - Immunity to sunlight
  - Distance (supposedly up to 6m, testing successful up to around 12’)
  - I\(^2\)C (chain-able sensors)

- **Cons**
  - Pricey
  - Spread sensitivity
  - “Wacky” sensitivity to some situations
    - Edges
    - Smooth surfaces
Experiment

- Test the spread of the sensor
Experiment

- Manufacturer's plot for directional power
Future plans for SRF10

- Experiment with shrouding to direct sensitivity
- Two-layer configuration for differentiating between goal (block) and obstacle (other robot, human leg, wall)
  - Main sensors will be SRF10's while secondary layer will likely be SRF5's
DCS900

• Pros
  – MJPEG Stream
  – Single JPEG grab available
  – Rapid access to raw image
  – Auto-adjustment to lighting conditions

• Cons
  – JPEG decompression
  – Approx ¼ second lag
  – Network complexity
Tricky problem: same-colored block and background

- White block on a white background
Possible solution: detect edges

- Simple vertical-only Sobel
Histogram to “find” heavy edges

![Histogram graph showing heavy edges](image-url)
Future Work for DCS900

- Investigate other lightweight filters to ferret out edges
- Investigate multiple simultaneous lightweight filters
  - Voting system
  - Detect situation (same-colored, contrasting colored) and determine best filter for the job
- Fine-tune consumer/producer model used for grabbing images