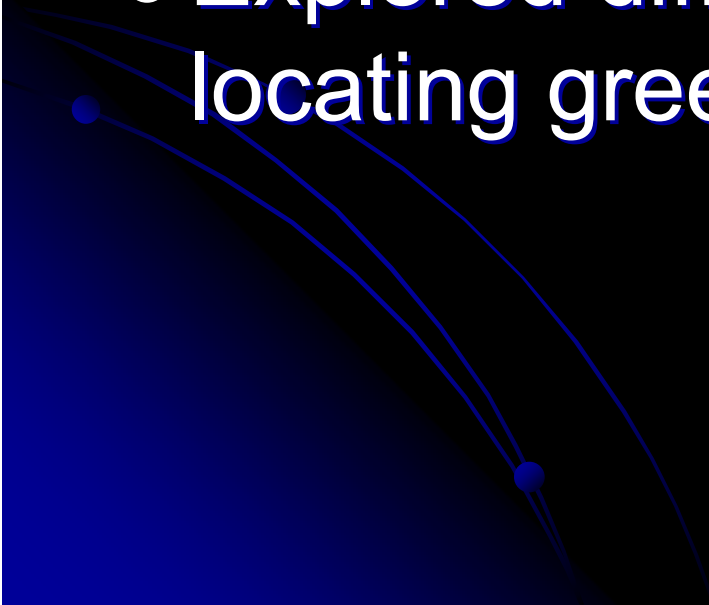# REU Presentation:
Week 7

Jacqueline Nelson

This Week's Progress

- More in-water testing.

- Explored different color spaces for locating green objects.

Water Testing

- Experienced no hardware failure for the first time.

- State machine for thrusters performed well.

- Calibrated depth sensor successfully.

- Collected more test images for machine gun nest, pipeline, and flare.
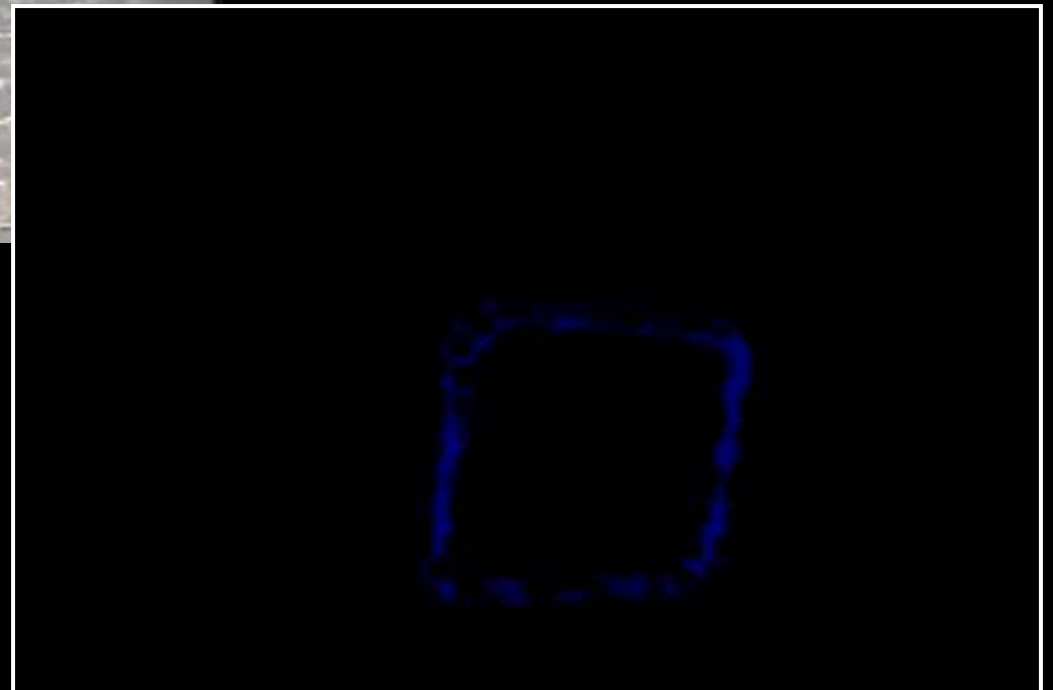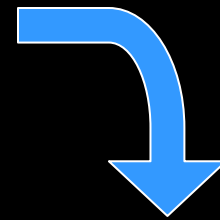
The Flare
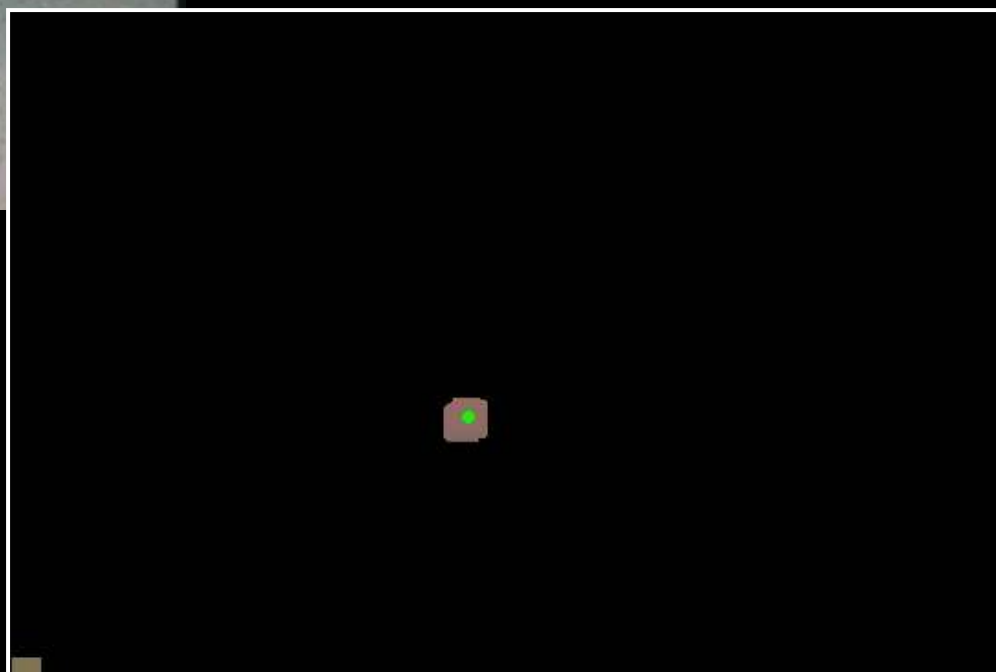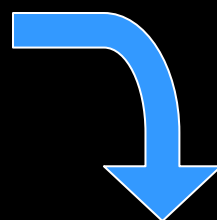
Flare Code Results

- Code is unable to detect flare on 24% of the test set (~500 images)
  - Always the instances when flare is far

- Code correctly approximates the flare center on the other 76% of the test images.

- A false flare center is never generated

Legend:
- No Detection
- Positive ID
- False ID

Test Set
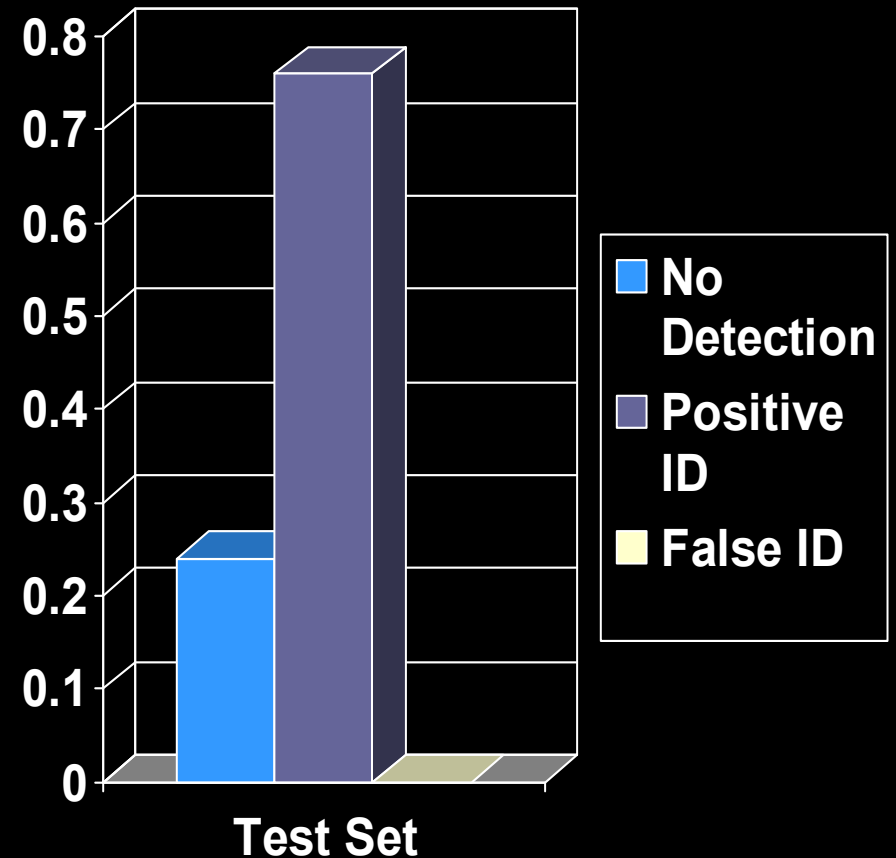
Machine Gun Nest

Machine Gun Nest

- I am able to generate more successful object extraction when green object images are converted to YCrCb color space.
  - Cr and Cb values remain more stable than previously used BGR values.
- Currently exploring the use of linear regression to perform box-fitting around the structure.

Barbed Wire
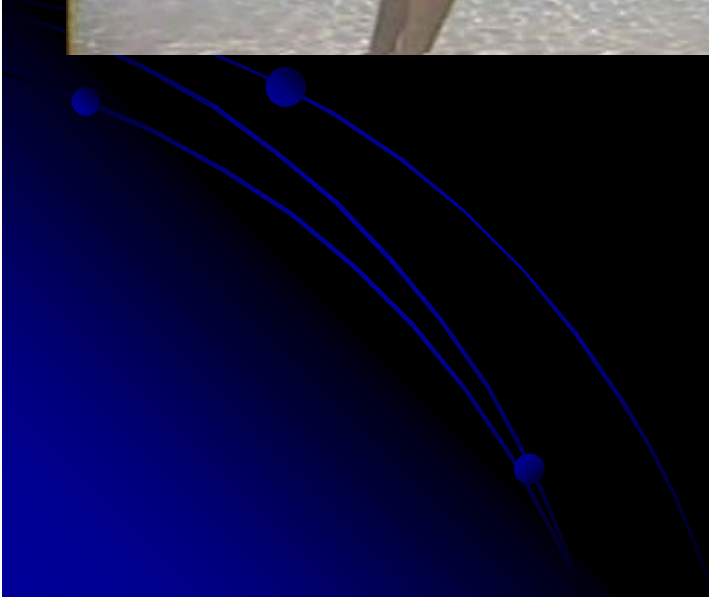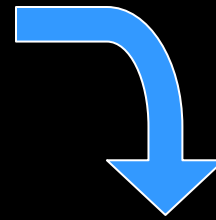
Barbed Wire

- With new code, line fitting to barbed wire is more accurate.

- Still getting false lines from the reflection on the surface.

- Once the box-fitting method works, it can be applied to the barbed wire.

  - A box would get more information for the state machine, such as object area to better approximate the distance to the object.

Goals for this Sunday

- Autonomous flare detection and "firing."

- Autonomous pipeline following.

- Have mounted arm for briefcase recovery.

- Have mounted projectile launcher.

Goals for Next Week

- Correctly approximate rectangle around machine gun nest.

- Make significant progress with bombing run code.