

SwimView 2.0

Data Acquisition Summary

Objectives:

- Acquire video footage of swimmers to create imaging models needed to develop the SwimView 2.0 system.
- Provide samples to exhaustively test the SwimView 2.0 system.
- Collect enough data to determine if a marker will be needed:
 - Possible shapes include: square, circle, cross, AU logo
 - Possible colors: red, yellow, white, pink (these are both flexible, and may change)
 - Location of markers: left and right sides of torso, and upper back
 - In order to determine if a marker is need, half of the test runs should include a marker, the other half should not.
- Collect data to generate a custom Haar Cascade Classifier.
 - Requires approximately 5000 positive images (images with swimmer in the frame)
 - Requires approximately 5000 negative images (no swimmer in the frame)
- Note: In order to adequately test the system, some of the videos should not be included in the development phase. In particular, two runs with markers, and two runs without markers will be kept in storage to test the final system. It is important that the swimmers in these runs do not participate in any other data collection runs. This will verify that the Haar Classifier is working without bias.

Camera Placement:

- Two cameras will be used to conduct the tests.
- A Raspberry Pi PiCamera V2 will be used to collect video footage of the swimmer during each test run.
- A digital camera will be used to take photos throughout the entire test. Some of these will be of the swimmers, and some will be with no swimmers present.

Personnel Requirements:

- One person will need to carry the PiCamera along the length of the pool.
- One person will need to carry the Raspberry Pi, and any electrical cords along the length of the pool.
- One person will need to take pictures using the digital camera.
- One person will need to verify the footage after each run (probably using remote desktop)\, or something similar)
- One or two people will need to place markers on the swimmers
- We will need swimmers. Lots of swimmers.

Required Runs:

- Two runs with markers. Shapes: All three. Color: Pink
- Two runs with markers. Shapes: All three. Color: Red
- Two runs with markers. Shapes: All three. Color: Yellow
- Four runs with markers. Shapes: All three. Color: White (Two of these runs will be stored for later use)
- Two runs with no markers. (Two of these runs will be stored for later use)