COMPLETED DATASETS:

# Dataset 1

## Notes:

Blue circles represent training locations, orange represent testing locations.

This dataset attempts to capture how well the network can interpolate between the limited and discrete training locations. Note that there are significantly more testing locations than training locations, which is reflective of the true scenario. It is primarily designed to work on a network without odometry capabilities, with the pictures being shuffled. However, this setup could also test the rotation accuracy of an odometry capable network. The environment is completely static. Circles represent robot rotated through 360°: blue for training data, and orange for test data. Three different elevations of the head should be recorded at each position: head angled down, level, and angled up. Various rotations of these images can be done in image processing. A calibration set of images should be recorded before the data is recorded. Truth data will be recorded by the infra-red motion capture system in the lab. A problem that will occur is on the occasions when the robot handler blocks the IR cameras with their body, preventing truth data from being collected. A solution to this could be interpolation by 2nd or 4th order polynomial, especially if the robot handler tries to keep their movements smooth.

To introduce dynamic objects, a stationary ball could also be included in both training and testing images at varying distances from the camera, and multiple rotations could be done in each location, with the ball in different locations each time.

# Dataset 2

## Notes:

Blue circles represent training locations, orange represent testing locations.

POTENTIAL FUTURE DATASETS:

# Dataset 3

## Notes:

This dataset is designed to test a similar thing to dataset 1, but with more of a focus on odometry capable networks. The robot handler would smoothly translate the robot forwards in 8 different compass bearings for each location. Various rotations of the image due to the walk motion can be simulated by rotating the images in image processing. One of the potential flaws of Valada’s odometry capable network is that the odometry sections of their network would potential have a hard time training on rotation only training sets. This dataset tests the interpolation ability of the network for odometry enabled networks. Additional sets of training recordings should be taken that include things like having the robot head rotated left or right off the axis of movement, and having people in the scenes either stationary in different locations, and walking/moving.

# Dataset 4

## Notes:

This dataset would use the training data from Dataset 3 (or perhaps Dataset 1), and record random walks on the field for testing. The oscillating motion should either be due to the robot’s actual walking motion, or simulated by the robot handler. This scenario simply tests a more realistic situation. Additional testing datasets should include the robot head rotated left or right off the axis of motion, and people standing stationary/walking around.