

# PredNet Algorithm for NGSS Cameras: June 2019 Update



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PredNet experiments used datasets from the NGSS cameras at the Gamma Irradiation Facility at Sandia National Laboratories

At present, PredNet is running on bins of 25 frames per batch

- investigating the implications of testing on larger batches

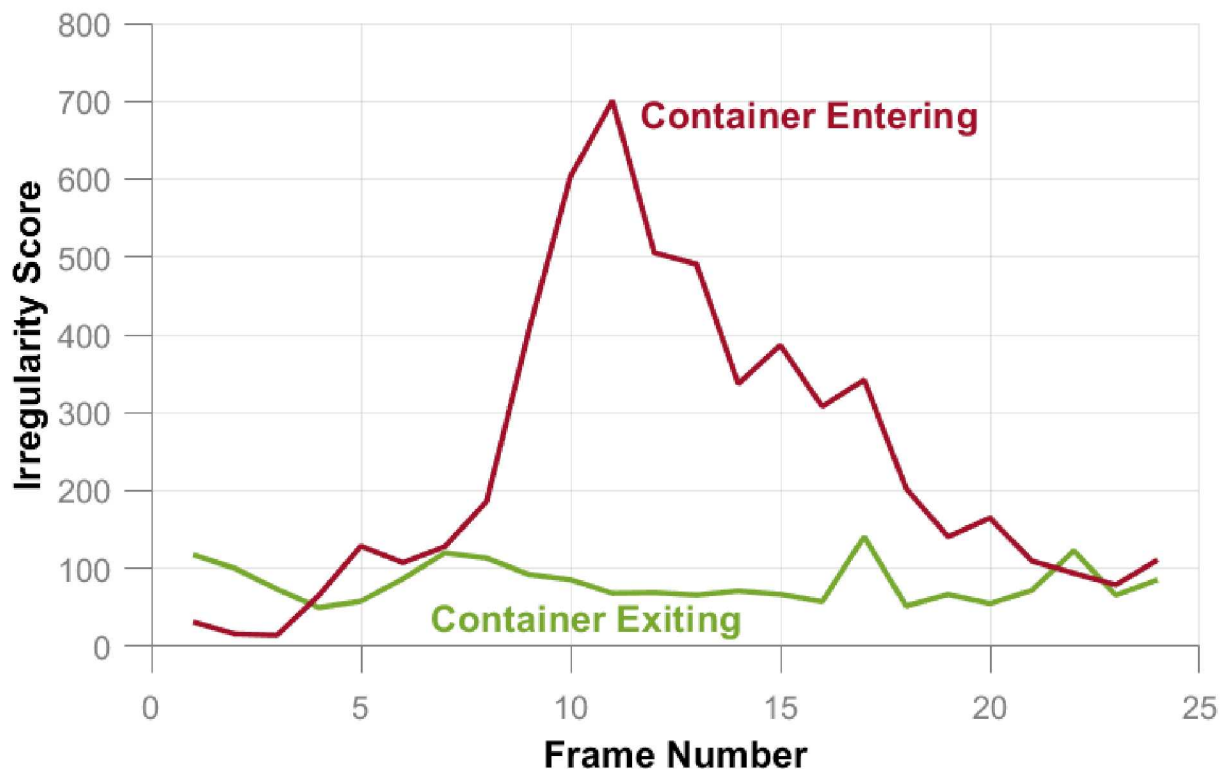
Current tests are looking at the detection of directionality of movements

- Exit of containers vs entrance of containers
- Training dataset is of containers solely exiting the facility
- Tested dataset is of containers exiting and entering the facility

PredNet results show containers entering the facility as anomalous and with these results we are now determining the best suited statistics to evaluate the outputs

A statistical evaluation of the number of pixels flagged during the testing for the container entering or exiting the facility shows significant differences between the two directions which is very promising

## Anomalous pixel count results for containers exiting and entering facility

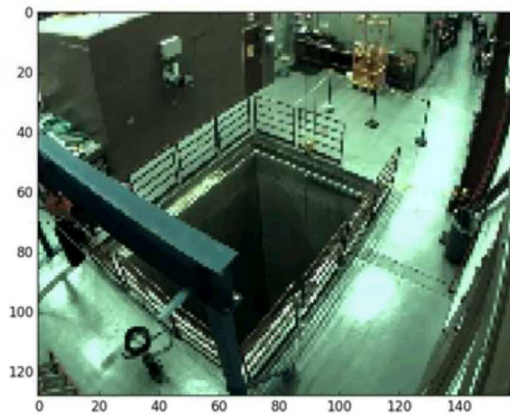


Irregularity scores are calculated using the total squared error between the actual and predicted images for each frame

## Video showing the sequence of containers entering and exiting the facility

### Container Entering

Actual Image



Difference Between  
Predicted and Actual  
Images



Frame Number: 1