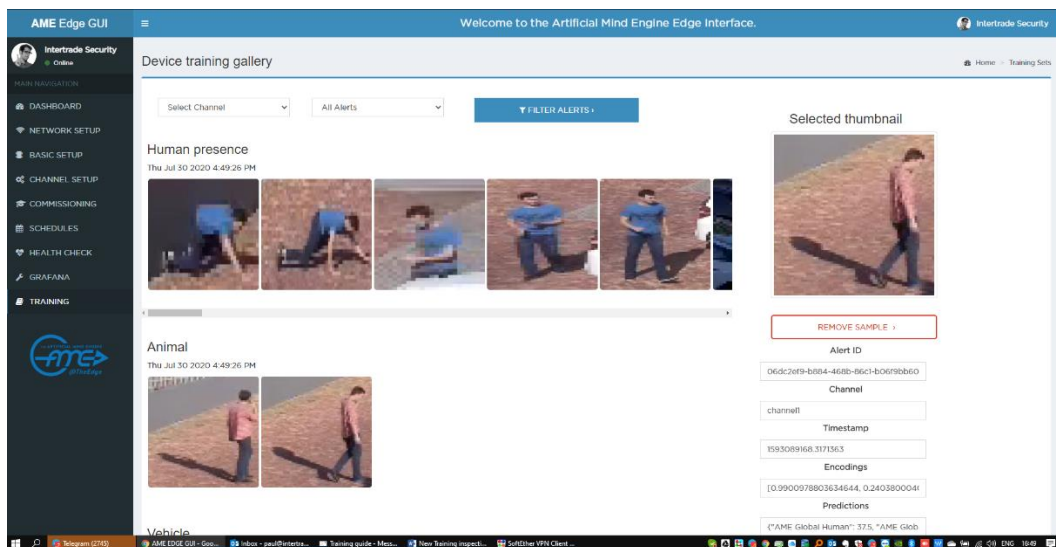




Installation considerations and advanced configuration

It has come to our attention that the ability to train the same objects in different classes has created some confusion and produced inaccuracies in Avlytics notifications.

To assist in correcting the models ability to accurately differentiate between classes, we have upgraded the edge interface to allow inspection of training samples submitted to the device. In addition to the ability to inspect the training we have added the ability to remove samples that were incorrectly submitted or that would negatively affect the devices training.



Other influencing factors that could negatively affect the devices ability to differentiate between objects are as follows:

The Cameras resolution determines the range of detection.

A Quality score accompanies the detection and is a good indication as to how well the device can differentiate between objects.

The Quality range will determine the ultimate accuracy of detection and a guideline is as follows.

Quality Measurements:

Detections with Quality ranging from 60 ~ 65 have the ability to get confused and would result in lower accuracy of prediction when training quality is outside of this range.

Example of quality indicator: Quality Score = 62.20



If the Training set is representative of the quality score of detection you would like to make then this quality limitation is mitigated.



The Region

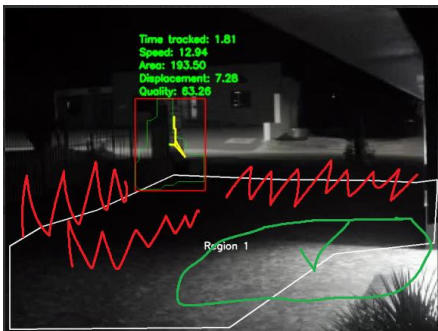
When a region of interest is drawn on an image there are a few negative factors to consider.

1. Do not include unnecessary objects and structures in the region of interest.
2. Do not draw regions that would result in training objects with vast quality score differences.



The Lighting

To accurately differentiate between objects it is advised that the contrast of an object and its background are clearly distinct. If the object blends into the background there is a good chance that training these objects will result in a training set with a vast number of characteristics that overlap with each other.



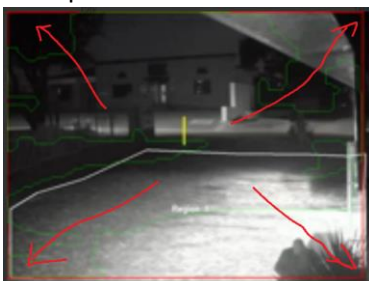
Detection sensitivity

Each channel has fully customisable configuration options, below are a list of options and the description of how they affect the detection capability.

Blob Max Area

- Anything over this size will not be predicted on.

Example of an inaccurate Max Area which leads to predictions on nonsense.





Blob Min Displacement

- The distance an object must move before a prediction is made.

Example of an event with very low displacement. The yellow track shows how much area an object has displaced.



Blob Match Frame

- How sensitive the device is in picking up a track on detection when an object stops and then moves again.



Blob Min Area

- Anything under this size will not be predicted on.

Example of an inaccurate Min Area which leads to prediction on nonsense.



Dilate Iterations

- How tightly the red detection block clings to a detection.

- 1 - Very tight fitting (requires high resolution) and requires more device resources.
- 2 - Standard value used for medium range detections.
- 3 - Loose fitting, includes whole image easily, predominantly used in long distance detections.



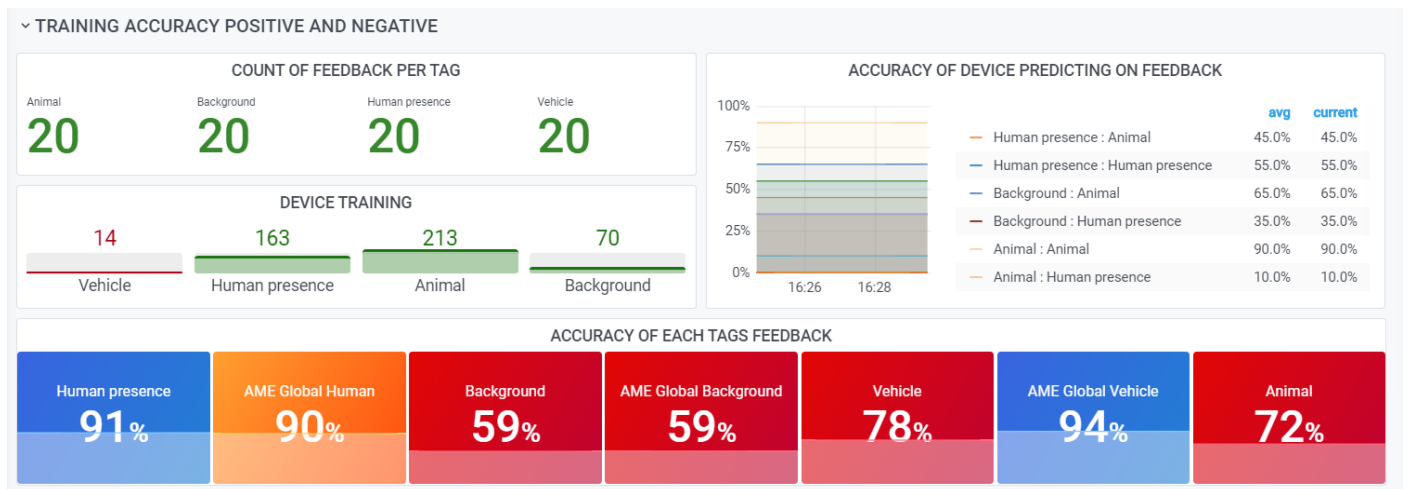
Above figures illustrate the outcome with various dilate iterations configured.



Calibration Metrics

A new AUC / Probability indicator panel has been added in the user interface to aid the installer in identifying potential detections issues. These measurements are derived from the devices training and a certain number of sample images called the Calibration limit.

The calibration limit defines how many of the preloaded images in the devices database should be loaded up to measure accuracy.



The device starts off predicting its accuracy by showing the probability and expected overlap of each of the tags that are competing to predict on an event. For a tag/class to compete the minimum feedback value for that tag must be reached.

This is a setting that is configurable through the devices basic setup page. The setting is: min_feedback

The recommended value for min feedback is 20 which instructs the devices to only include a tag in the competition when it has acquired a minimum of 20 representative samples for that class.

The devices Auc metrics show the probability of predicting on the calibration limit which is a random set of know samples.

As you train the system the random calibration set is replaced with images of that particular camera, meaning the AUC metrics get more accurate as you train the system because you are getting Auc measurements of probability based on predictions on representative images.