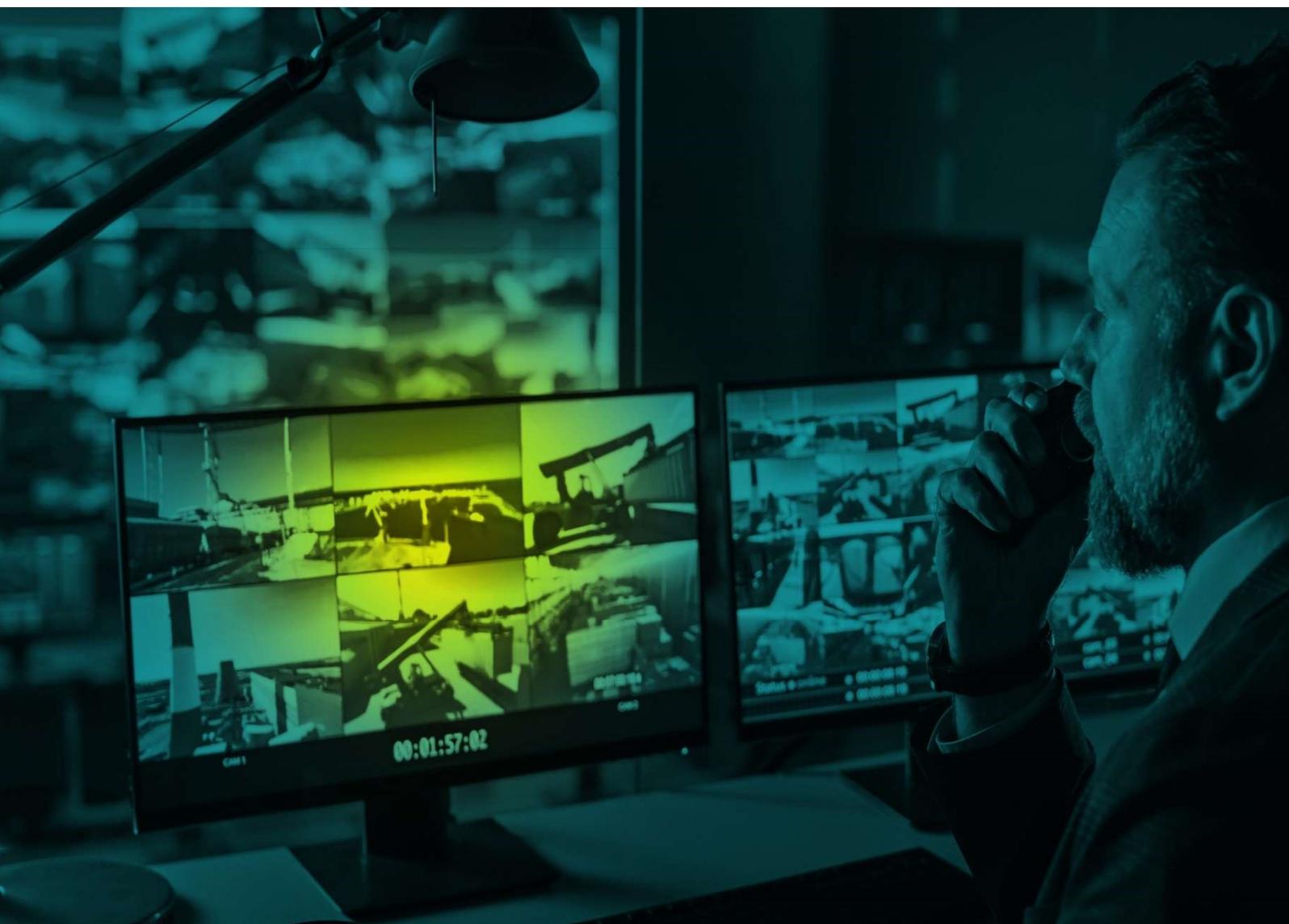


How to configure TRES Object Classification Detection in FireFly 3.1



6 November 2024

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InteleX Vision
SEE BEYOND

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1. Objective:

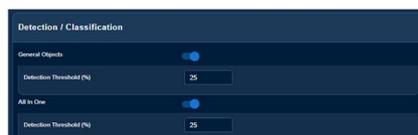
The purpose of this document is to guide our customers and users in how to configure FireFly product to use TREX object classification detection video analytic.

2. Track Changes:

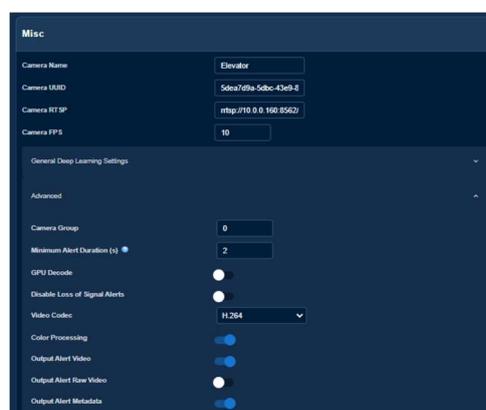
| Date | Author | Description | Release |
|------------|--------|----------------------|---------|
| 05/11/2024 | PMC | All chapters changed | Draft |
| | | | |
| | | | |

3. Prerequisites:

- Latest version of FireFly installed and up to date.
- RTSP video feed of the intended camera successfully added.
- Under “Detection / Classification” please enable “General Objects” and “All in one” Deep learning networks.



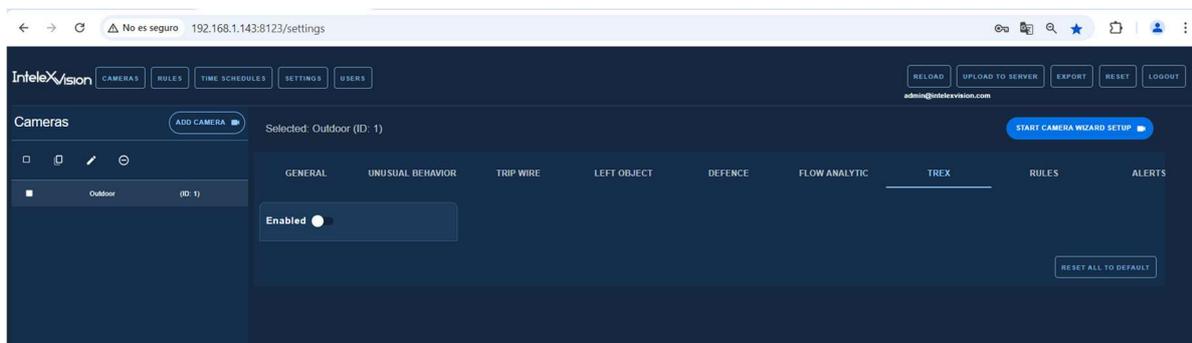
- Under the Option “General Deep Learning Settings” please ensure “Output Alert Video” and “Output Alert Metadata” is enable as per the image below:



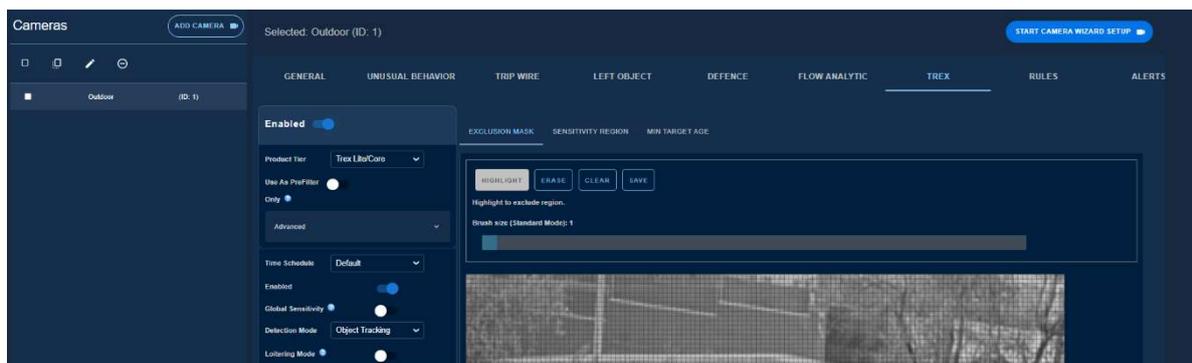
4. Video Analytics Configuration steps:

Under: <http://192.168.1.143:8123/settings>

- Please log in with your credentials
- Select the camera you wish to configure from the list on the left.
- Now select the option on the right-hand side “TREX” as per the image below.

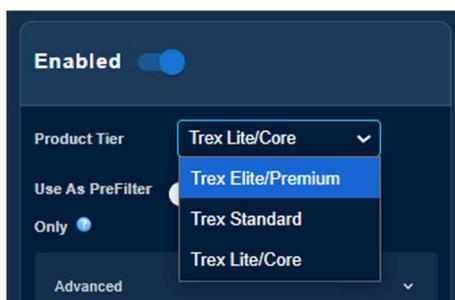


- Please select “ENABLE”



5. Product Tier:

Once this video analytic engine is enabled now you can choose the Tier of the product you wish to use. Please note the Tier of product here is the same as the Tier of Software License you have purchased.



- **TREX Lite/Core:**

Select this option if you have purchased a TREX Lite or TREX Core software license.

- **TREX Elite/Premium:**

Select this option if you have purchased a TREX Elite or TREX Premium software license.

When selecting this option, you now have the capability to choose where do you wish the processing of this video analytic to occur.

This can be on your CPU (Central Processing Unit), or GPU (Graphics Processing Unit), GPU emulation.

Please only enable these options according to your hardware capability, availability and configuration. If you are not sure, please leave the selection on CPU or contact our support team for more information.

- **TREX Standard:**

Select this option if you have purchased a TREX Standard software license.

When selecting this product tier option, you also have the capability to choose where do you wish the processing of this video analytic to occur.



This can be on your CPU (Central Processing Unit), or GPU (Graphics Processing Unit), GPU emulation.

Please only enable these options according to your hardware availability and configuration. If you are not sure, please leave it on CPU or contact our support team for more information.

6. Time Schedule:

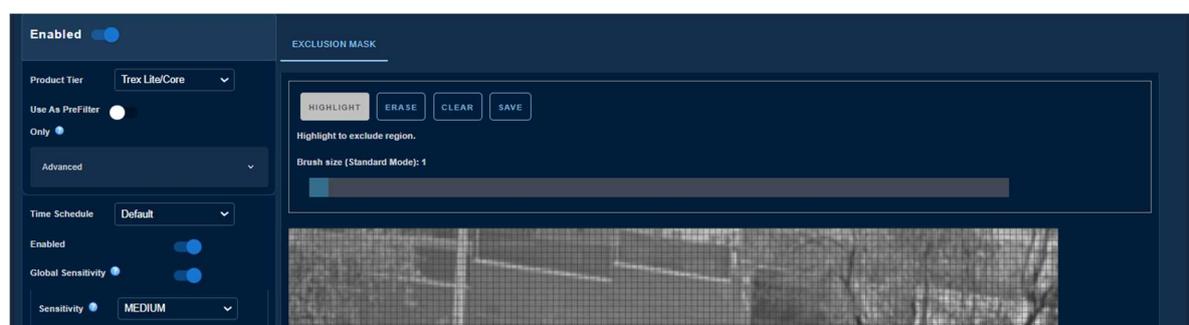
If you wish for the detection of intrusion to be enable during a particular time schedule, this needs to be configured on a different page and option called: “Time schedules” available from the top left hand side menu.



If you do not have alternative time schedules pre created and available on the drop-down list, you can always select the default.

- Please select “Enable” option to continue:

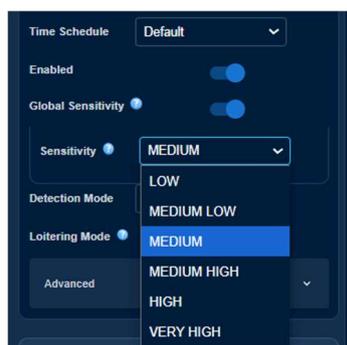
7. Sensitivity:



Our next step is to configure the sensitivity.

This parameter as per its sensitivity level can be applied to the entire image using the option “Global Sensitivity” option available on the image above.

Alternatively, the sensitivity can be individually adjusted and applied per region of interest.



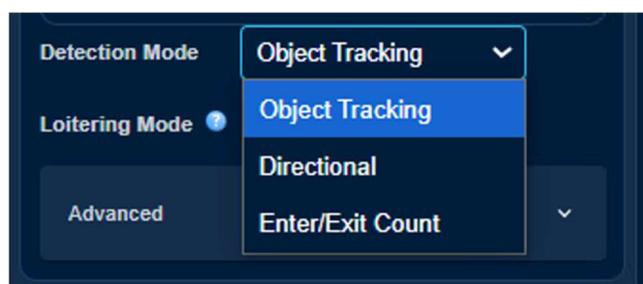
- Please select a starting level of sensitivity.

After testing your configuration, if you find this sensitivity is not enough or it is too high, not triggering or triggering too many events you can always reduce the sensitivity level to lower. For the purpose of this document, we will choose “MEDIUM”.

If sensitivity per region is not enable, the chosen value is applied to all regions.

8. Detection Mode:

Depending on your use case needs, camera positioning, location etc, we offer 3 detection modes you can select from:



- **Object Tracking:** We can detect, alert and track across the FOV and highlight the object that has triggered the detection. This can be a Person, vehicle, animal etc. For the purpose of this guide, we will choose “Object Tracking”.
- **Directional:** We will detect but only alert if the object movement direction has complied with the pre-configured directional trigger. (IE. From left to right or vice versa).
- **Enter/Exit Count:** We will detect and alert every time an object has entered or exited a particular region of interest defined on the camera FOV.

Loitering Mode: If you wish to track, larger targets for longer, please ensure that Loitering Mode is enable. This is not recommended for noisy video feeds.

9. Advanced: Hybrid Tier Levels

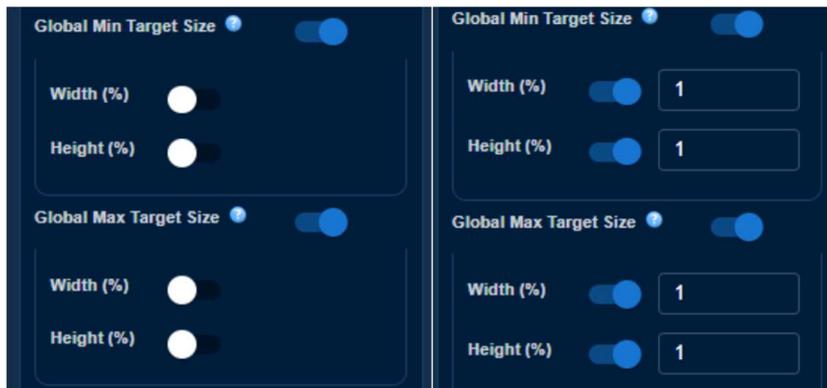
- Please select “Advanced”.
- From the new list now available please enable “Hybrid Tier Levels”.

This video analytic engine module will improve nearby target detection and tracking. Recommended for Thermal cameras in hot environments.



10. Advanced: Object Size:

- Please select “Global Min (Minimum) Target size “and enable each option accordingly.



- Please select “Global Max (Maximum) Target size “and enable each option accordingly.

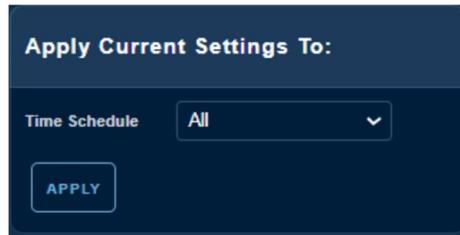
Enter the values for the minimum and maximum object target size using a percentage of size of the object in the FOV. This can be configured by object Width and Height.

Please note: The detection object below the minimum and above the maximum values entered, will not generate an alert.

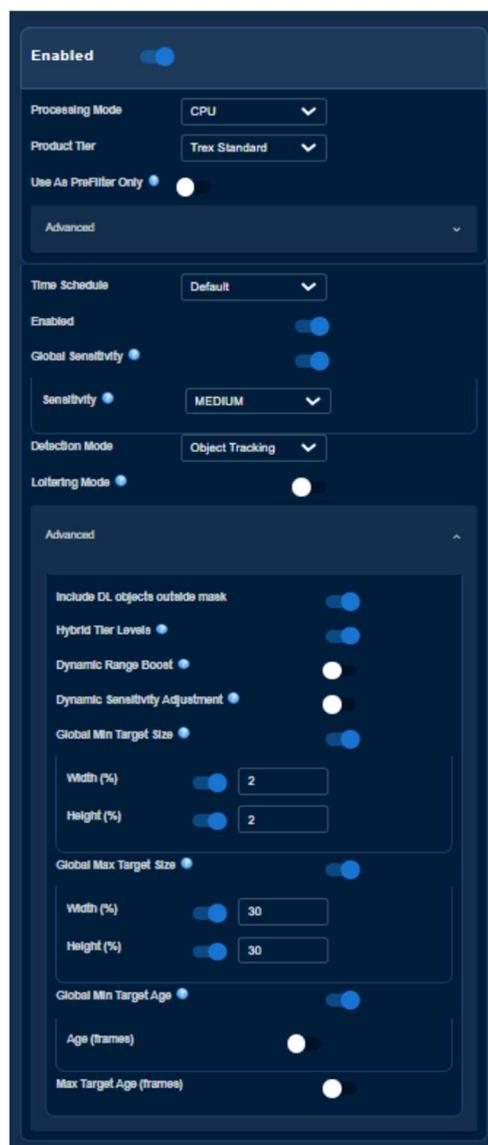
Once you have entered the values above, under Apply Settings options:

If you wish to apply the current configuration settings to a particular pre-defined time schedule, please select it from the dropdown menu.

Alternatively, you can apply it to “All” time schedules available. Please select the “APPLY” button to apply the configuration changes.

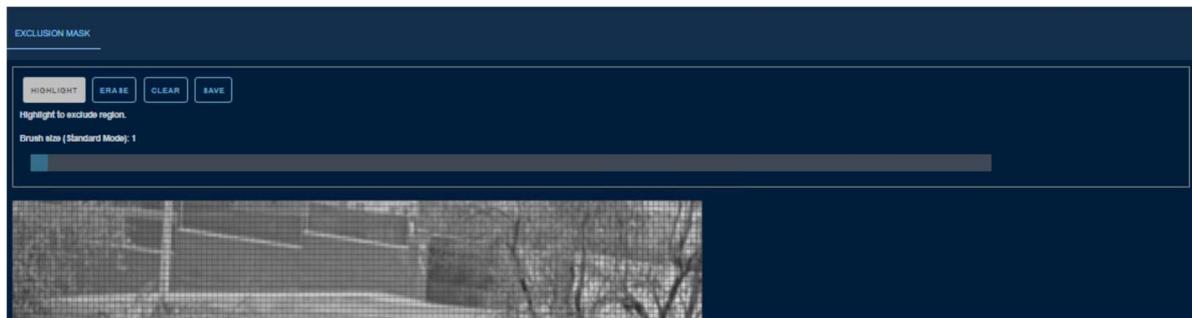


11. Resume of Options: (Suggestion)



This is a good configuration using CPU as the processing time, TREX standard, tracking at close and mid-range distance, minimum and object size applied, please adjust the object size accordingly.

12. Exclusion Mask Configuration:

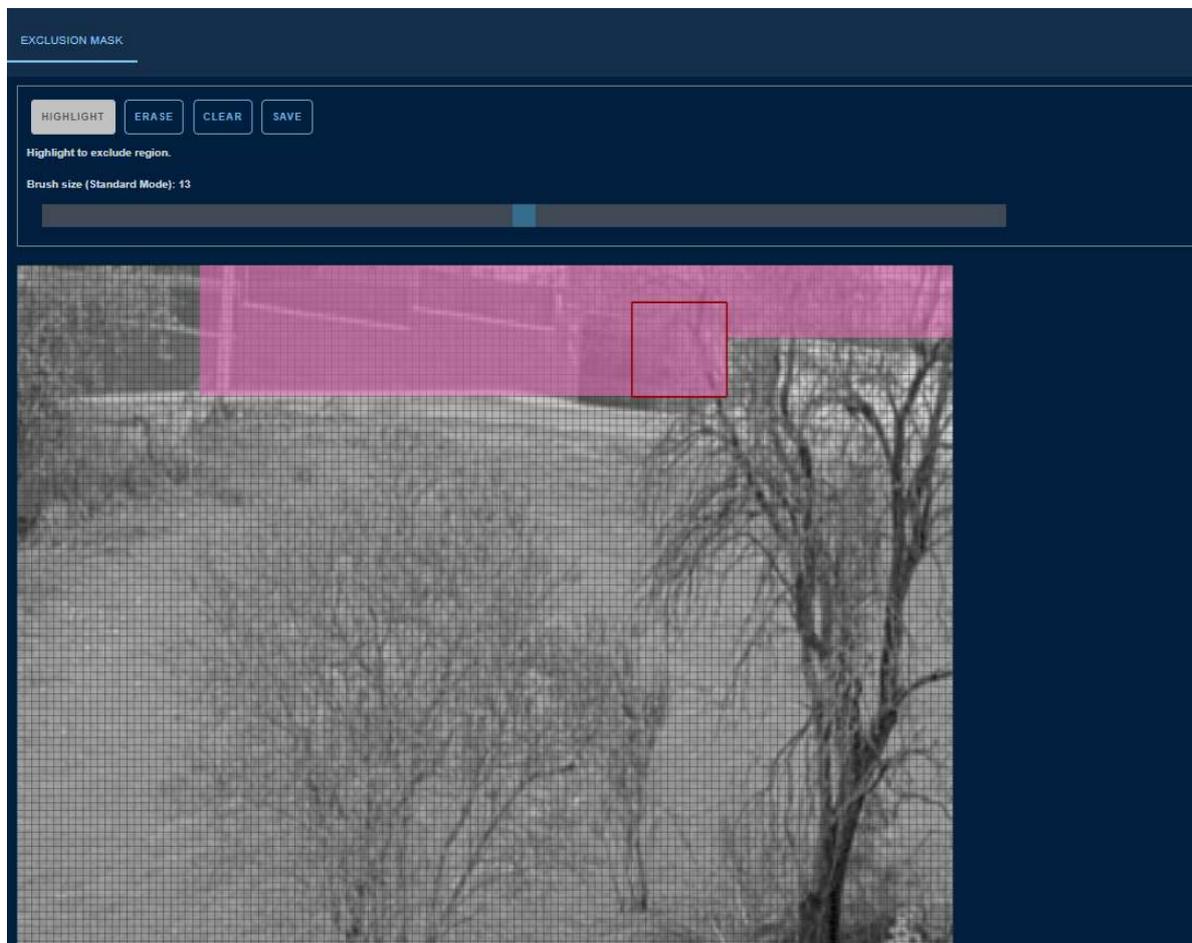


In this area, using the Brush Size, please select any area of the FOV you wish to exclude.

This could be a private area you do not wish to detect and track.

Please find an example of an Area of exclusion, drawn with a medium size Brush. Once the desired area correctly identified and highlighted. Options to “ERASE”, and “CLEAR” are available.

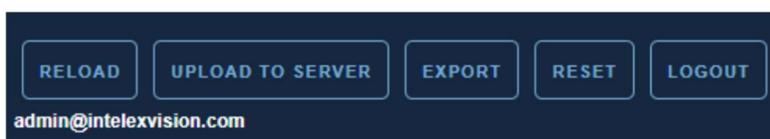
- **Once the Exclusion area is highlighted Please press “SAVE”.**



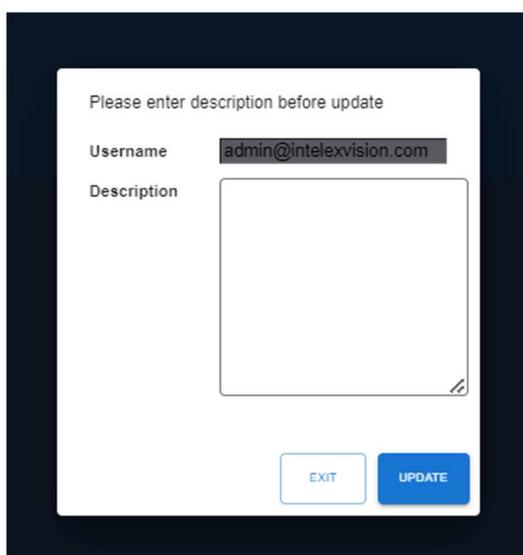
13. Saving Changes:

Once you have achieved the desired detection and tracking configuration, it is important to save these changes and applying them to the video analytic engine.

- Please select the option “**UPLOAD TO SERVER**” from the top right hand side menu as per the image provided below:



Once the option to upload is triggered, a new window will prompt more details.



- Please select the option “**update**” to apply the new configuration changes to the FireFly server.

Please allow for the timer to finish before reloading the screen.



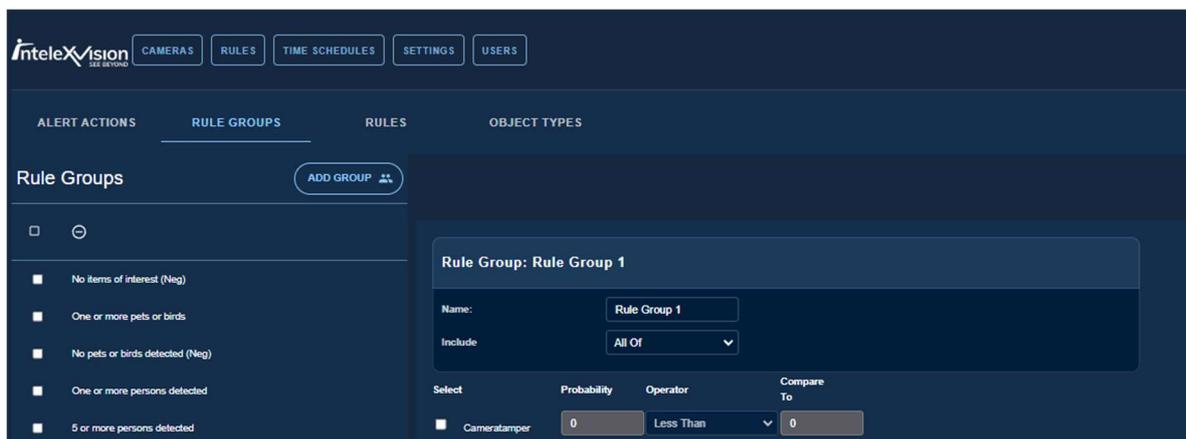
Once this process has been completed, you can now continue to another page or option.

- Please re-enter your credentials and select “**LOGIN**”.

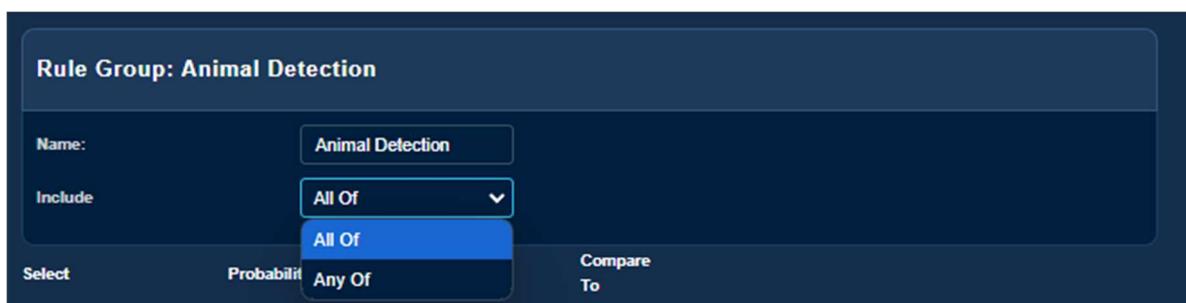
14. Create a New Rule Group:

In the Rule Group, you are now able to choose what items, objects or actions will trigger your new Rule Group.

- Please enter a name for your new rule group.



For the purpose of this guide, we are calling it “Animal Detection”.



Now we can choose what we wish to include in the trigger:

All Of: The trigger will activate when “All Of” the animals selected in the list are detected in the scene. A Cat, a Dog and a Elephant. When the 3 animals are simultaneously classified in the scene it will activate your new rule.

Any Of: The trigger will activate when “Any Of” the animals selected in the list are detected in the scene. A Cat, a Dog or Elephant. When any of the 3 animals are classified in the scene it will activate your new rule.

To select the objects, items, or actions please tick the white box next to it.

| | | | | |
|-------------------------------------|---------------|----|-------------------------|---|
| <input type="checkbox"/> | bus | 0 | Less Than | 0 |
| <input type="checkbox"/> | car | 0 | Less Than | 0 |
| <input checked="" type="checkbox"/> | cat | 25 | Less Than | 0 |
| <input type="checkbox"/> | cell phone | 0 | Less Than Or Equal To | 0 |
| <input type="checkbox"/> | dark | 0 | Equal To | 0 |
| <input type="checkbox"/> | dog | | Larger Than Or Equal To | 0 |
| <input type="checkbox"/> | ear defenders | 0 | Larger Than | 0 |
| <input type="checkbox"/> | elephant | 0 | Less Than | 0 |

Probability: Please enter the percentage of the minimum probability that the system needs to classify before defining it as a cat. As per the example below, any classification less than 25% certainty, it will not be identified as a cat.

Operator: In this drop-down list you can now choose the Boolean expression to use in order to deliver your intended use case:

Less Than: As a pet store owner, I must have 5 cats in stock in the camera FOV at all times. If the total number of cats in the FOV is less than 5, then trigger this rule.

Less Than or Equal To:

Equal To:

Larger Than or Equal To:

Larger Than:

Compared to: Here you can compare and match the object, item, action quantity with a real number.

For the purpose of this guide and to deliver a detection of an object using TREX we are choosing:

“Larger Than or Equal to”: “1”

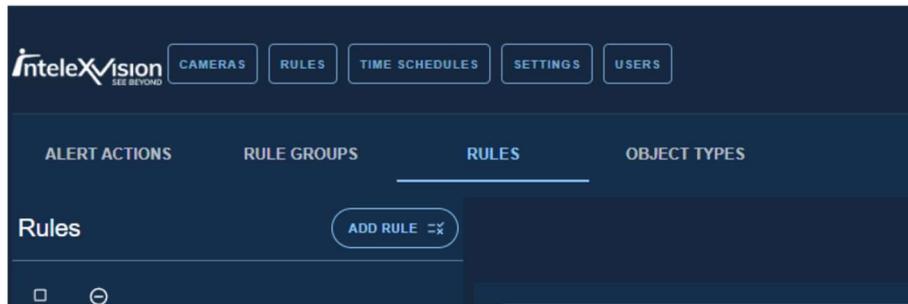
| | | | | |
|-------------------------------------|---------------|----|---------------------|---|
| <input type="checkbox"/> | car | 0 | Less Than | 0 |
| <input checked="" type="checkbox"/> | cat | 25 | Larger Than Or Equi | 1 |
| <input type="checkbox"/> | cell phone | 0 | Less Than | 0 |
| <input type="checkbox"/> | dark | 0 | Less Than | 0 |
| <input checked="" type="checkbox"/> | dog | 25 | Larger Than Or Equi | 1 |
| <input type="checkbox"/> | ear defenders | 0 | Less Than | 0 |
| <input checked="" type="checkbox"/> | elephant | 25 | Larger Than Or Equi | 1 |

Once you have selected the necessary objects or actions from the list and configured the parameters as per the example above, you can now save your changes to the server as per chapter 13 Saving Changes.

15. Create a New Rule:

If the rule you wish to apply is not available on the pre-configured list, you can create a new rule.

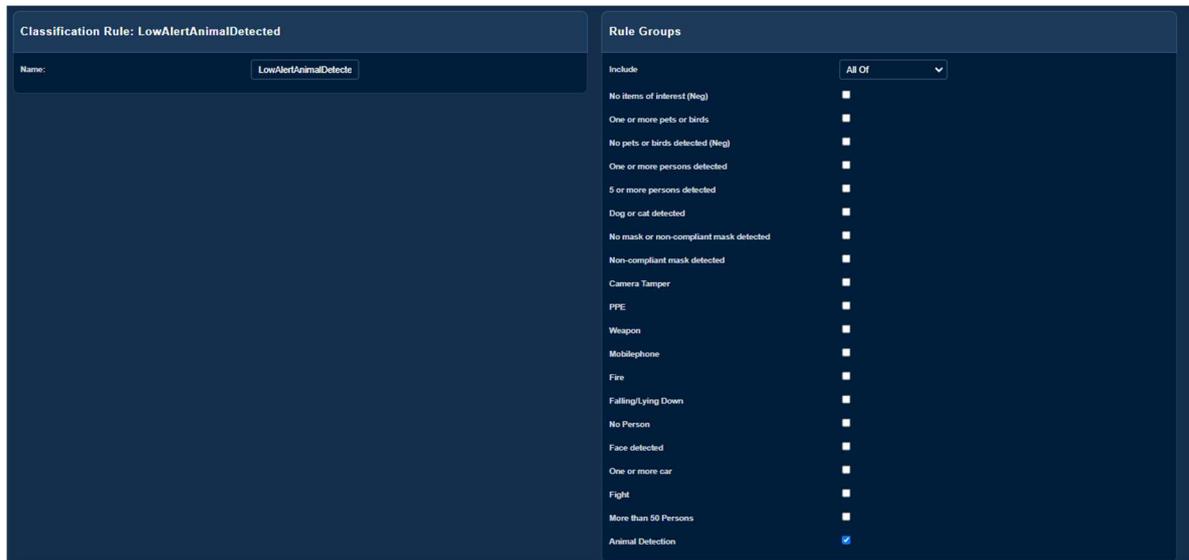
- On the top left of the menus, please select “RULES” then on the next menu please select “RULES” again followed by “ADD RULE” as per the image provided below:



Once you have selected “ADD RULE” a new rule will be available on the left column at the bottom of the list of pre-configured rules, displaying as “Rule #” just like the image provided:



The right-hand side screen options will allow you to change the rule name from “Rule 1” to something more appropriate such as “Alert_Type_Object_Name” IE: Low Alert Animal Detected”



- After naming your new rule, please select a “rule group” to include.

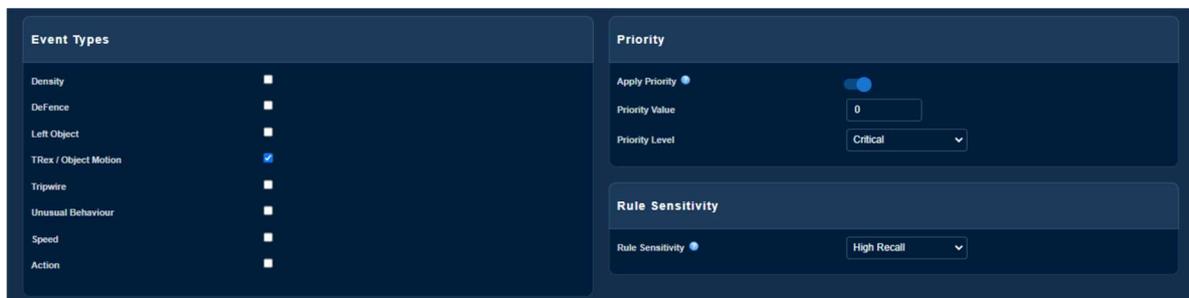
Here you can include multiple groups by selecting the tick box next to it:

Any Off: To include “Any Of” the rule groups available before activating this rule.

All Off: To include “All Of” the rule groups available before activating this rule.

Under the rule groups option available in the user interface, we can now select what video analytic engine will provide the metadata to apply the rule and the rule group.

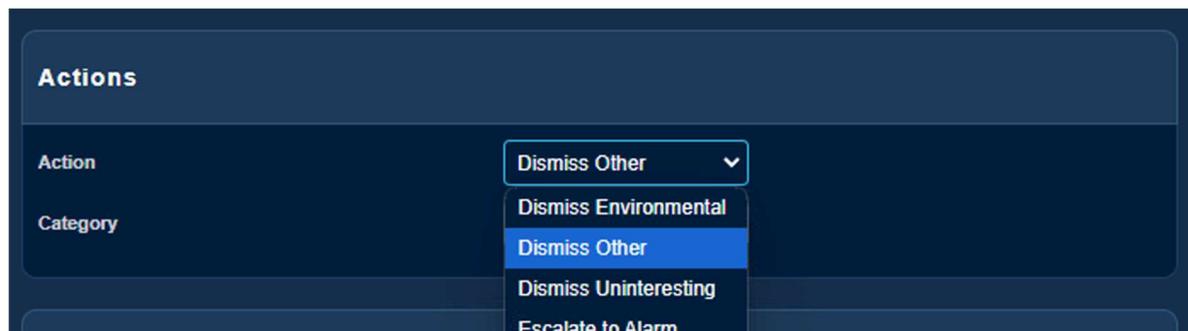
In this example the metadata and alert information will be provided by our video analytic TREX/Object Motion.



If you wish to apply a priority over other alerts being generated by the same camera, please enter a priority value and choose a priority level from the drop-down list. **Please note that if you use a priority level “Actions” will Not Apply.**

Alternatively, if you do not wish to apply a priority to your rule you can create an action.

- Please select the action you want to activate when this rule is activated.



Dismiss Environment: Dismiss as Environment noise.

Dismiss Other: Dismiss as another reason.

Dismiss Uninteresting: Dismiss as an uninteresting alert.

Escalate to Alarm: Escalate this alert to Alarm status.

- Please choose a Category for your rule from the options available on the drop down list.

Now it is time to configure the Rule Sensitivity, this can be done choosing 1 of 3 options depending in how sensitive you want the rule detection to be:



High Recall: When the object, item, action etc, is classified in minimum 1 of 3 video Frames.

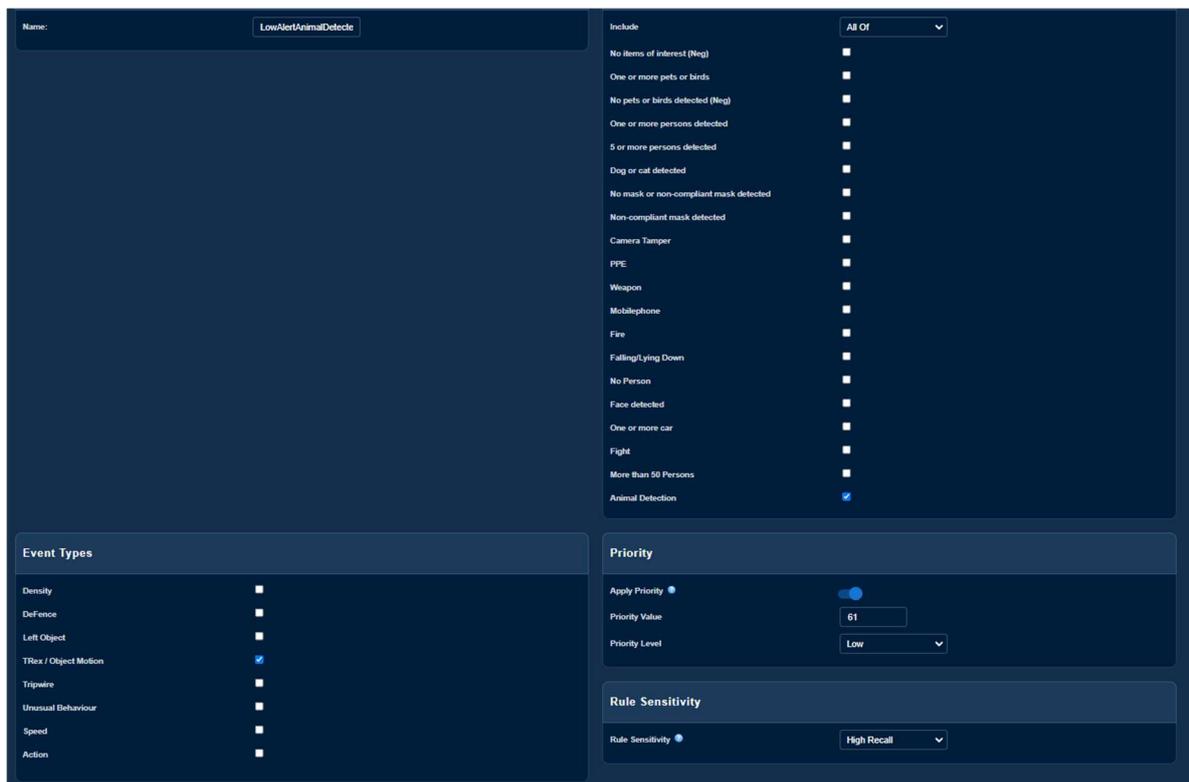
Hight Precision: When the object, item, action etc, is classified in minimum 3 of 3 video Frames.

Majority: When the object, item, action etc, is classified in minimum of 50% of the available video Frames. Ideally, we recommend no less than 10 FPS per camera.

For the purpose of this guide, we have chosen to apply Low Priority to our Animal detection Rule.

Once your new rule configuration is complete please upload your new setting to the Firefly Server as per chapter **13 Saving changes**.

Our example:

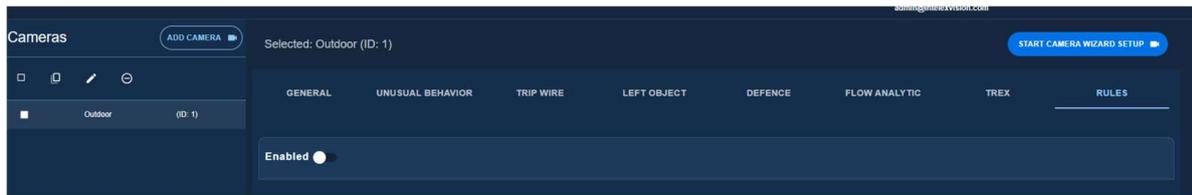


Now with the new Rule Group and the new Rule created you can choose what cameras to apply it to.

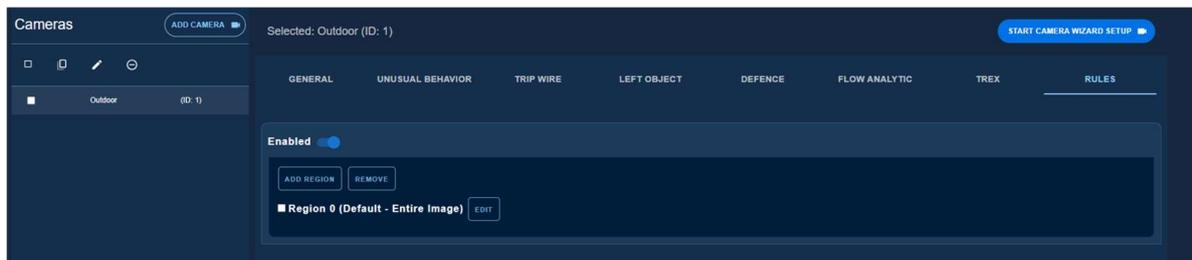
16. Camera Rule Configuration:

In this instance we will configure our video analytics Rules.

- Please select the camera from the camera list available on the left column.
- Please select “RULES” and select “Enable”.

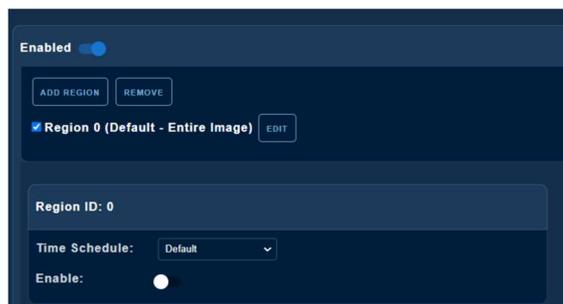


Once it is “Enabled”, you can now add a desired region of interest or by selecting “Region 0” it will apply your settings to the entire image as the default option.



Now with the “Region 0” (entire image) enable, you can select any pre-defined time schedule from the drop down menu.

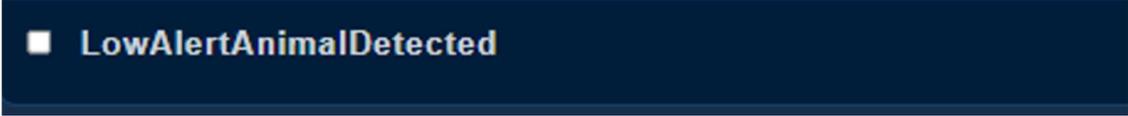
If you do not have a preferred pre-defined time schedule you can select the “Default”.



- Please select the option “Enable” to begin to deliver the remaining Rule configuration.

Now with the Rule engine time schedule enable, you can select a pre-configured template Rule to execute.

As per the previous chapters we can now see our new Rule in the list.

A screenshot of a dark blue rectangular button with a white square icon on the left and the text 'LowAlertAnimalDetected' in white, sans-serif font.

■ LowAlertAnimalDetected

- Please select your new rule.

Depending on your needs, camera resolution, positioning and field of view, you can enable one or multiple Rules to execute on this camera.

If you wish to have separate rules for a different region on the FOV, please use the “ADD REGION” option. Or you can erase an existing region of interest.

Please enable the Rules desired and select “Upload to server” as described under chapter **13: Saving changes.**

Please review your settings and then test the detection sensitivity, distance etc and adjust accordingly. Please remember to “Upload to server” once you have perfected your settings.

If you have any questions or need any further support do not hesitate to reach us under:

CustomerServices@intelexvision.com