WISENET

White paper

People Counting / Heatmap Technology

29th September 2016

Hanwha Techwin

Contents

1. Introduction

Security cameras that provides high quality image, varied view angle and advanced image processing are developed and deployed. This brings various applications over legacy video surveillance system. Information gathering and analysis technology is one of them which rapidly improving.

Hanwha Techwin camera provides various type of information such as tampering, defocus, movement and audio detection. In addition, people counting and heatmap feature through video analytics which allows advanced information beyond simple video surveillance.

People counting and heatmap features count the movement of people, then provide real-time information and statics by timeline. It will allows saving of user's time, manpower, expenses and also help to create added value.

This document is for understanding and easy-to-use of Hanwha Techwin people counting and heatmap feature.

2. Camera Installation Instructions

Hanwha Techwin people counting and heatmap features provide optimized performance when below conditions are met.

Video analytics feature can be affected by surroundings such as lighting, view angle and etc. Therefore, please carefully refer to and follow below instructions for camera installation. Otherwise, performance will not be assured.

2. 1. Direction of Camera

Camera (or lens) should look people down vertically (Overhead direction) for optimized performance of people counting and heatmap feature. If camera looks down diagonally, the performance is not guaranteed. In addition, camera should be installed at a height of 2.5m to 4.5m and no obstacle in its view.

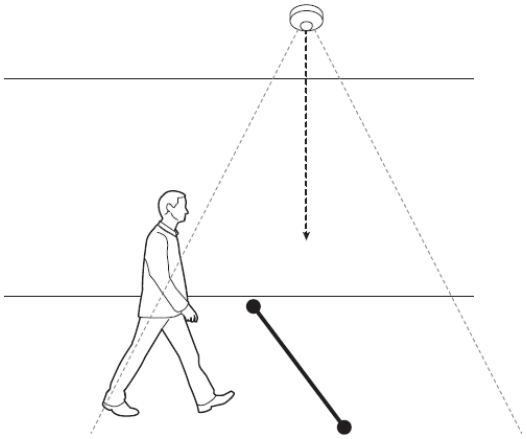

Figure 1. Good example of camera installation

2. 2. Lighting around Camera

Environment where has stable lightings is the optimal environment for video analytics. Recommended illuminance is 300 to 600 lux and it is need to avoid places where camera is exposed to strong light source such as direct sunlight, sunrise, sunset and any direct lighting.

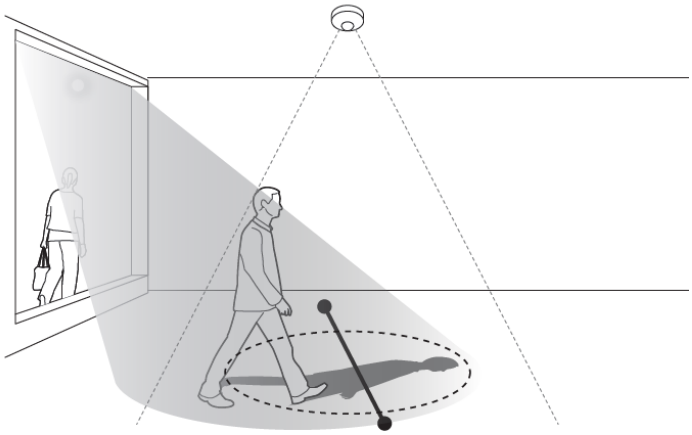

Figure 2. Bad example of lighting around camera

2. 3. Object around Camera

People counting is based on recognition of moving object. Therefore, performance can be affected if there is a revolving or automatic door (or any moving object at a fixed location) near counting rule (virtual line) or in camera's view.

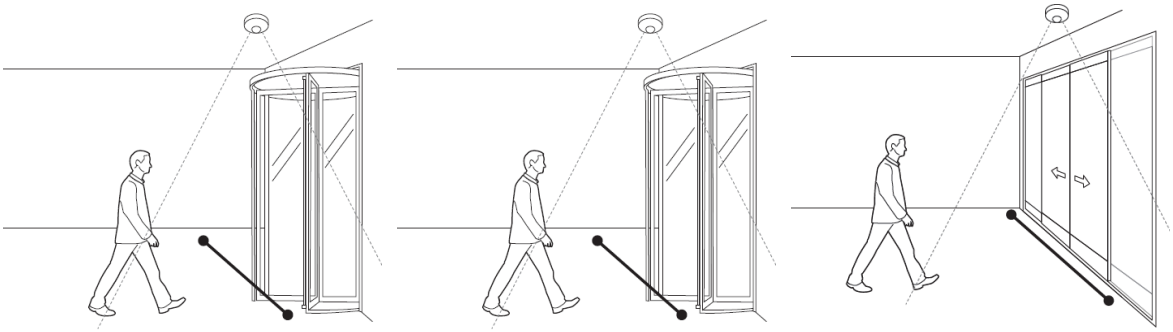

Figure 3. Bad example of door around camera

3. People Counting

Hanwha Techwin people counting feature checks people who access to assigned area. Moving object will be counted when it goes across a virtual line (counting rule) at a steady speed of 0.5m to 1.5m/sec and about 50cm intervals. Camera allows up to two virtual lines and they can be crossed.

Products that support people counting feature have instructions on their user manual. Followings are additional instructions to help user's comprehension.

3. 1. People Counting Setup

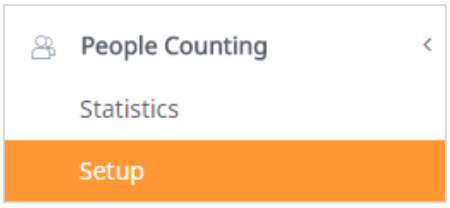

Figure 4. Setup Menu Location

· In web viewer, Setup → People Counting → Setup (Fig. 4) → Setup (Fig. 5)

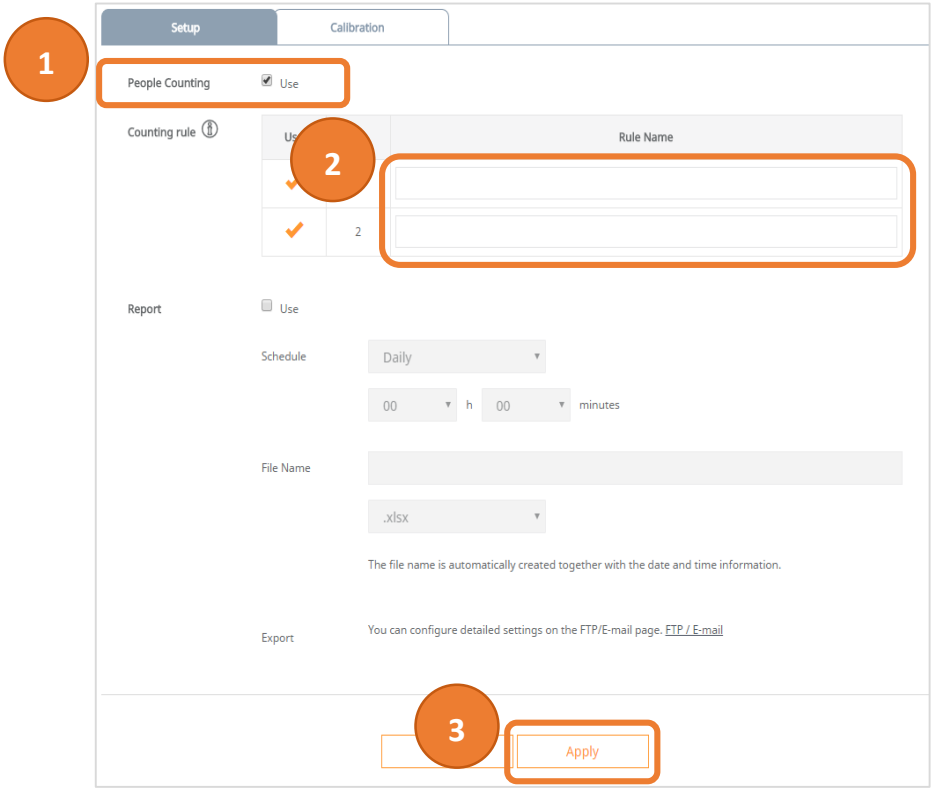

Figure 5. People counting setup menu

- Check ‘Use’ box (①)
- Two virtual lines will be shown and it is able to adjust their location, direction and length include rule name assign. Refer to Fig. 6, please.

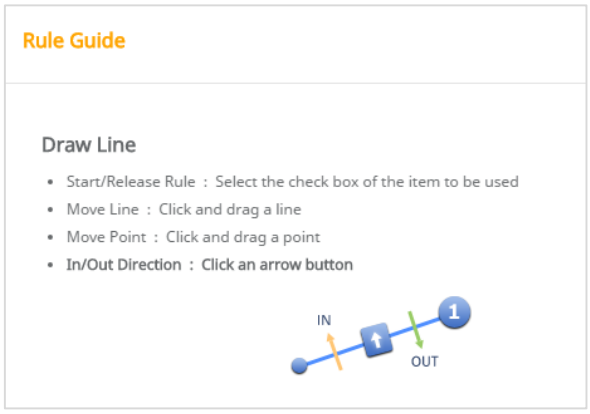

Figure 6. Counting rule draw guide

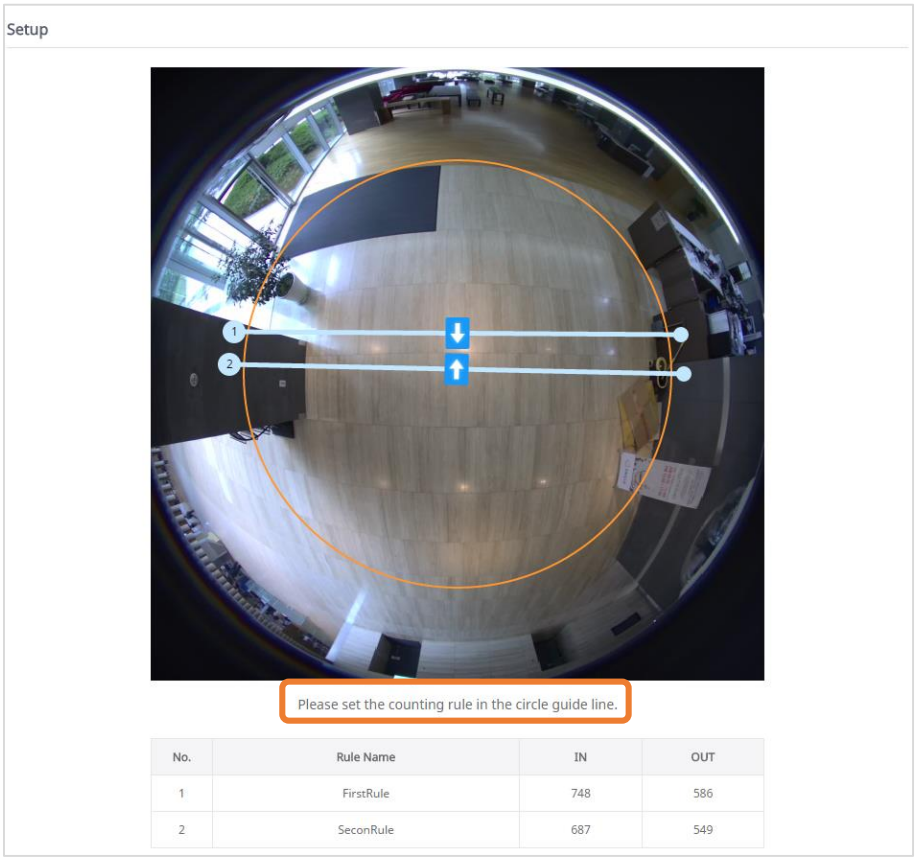

Figure 7. Fisheye camera counting rule (virtual line)

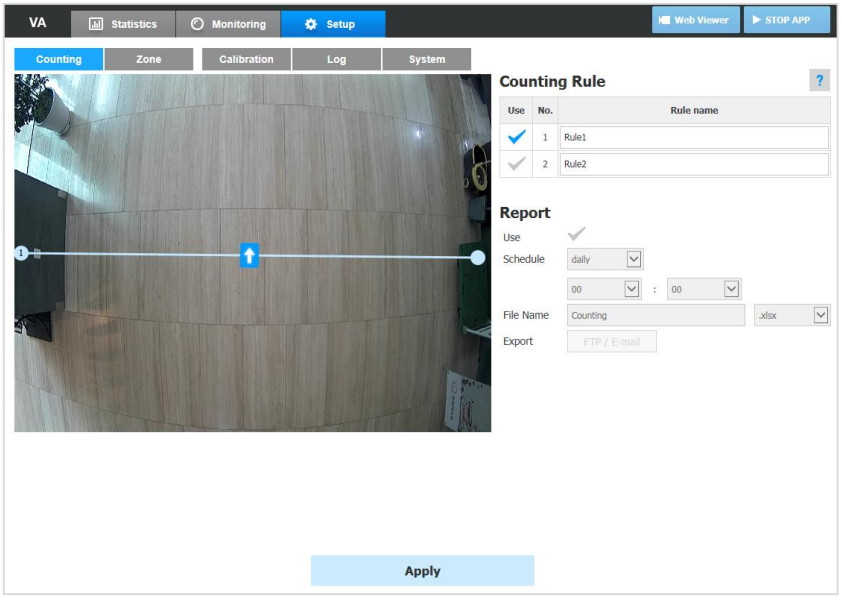

Figure 8. Normal camera counting rule (virtual line) setup

Incase of fisheye camera, draw virtual lines inside of guide line (Fig. 7, Orange line) to avoid false count due to camera lens properties.

3. 2. People Counting Calibration

Calibration may required to increase accuracy of people counting. There two options based camera height or people size in view.

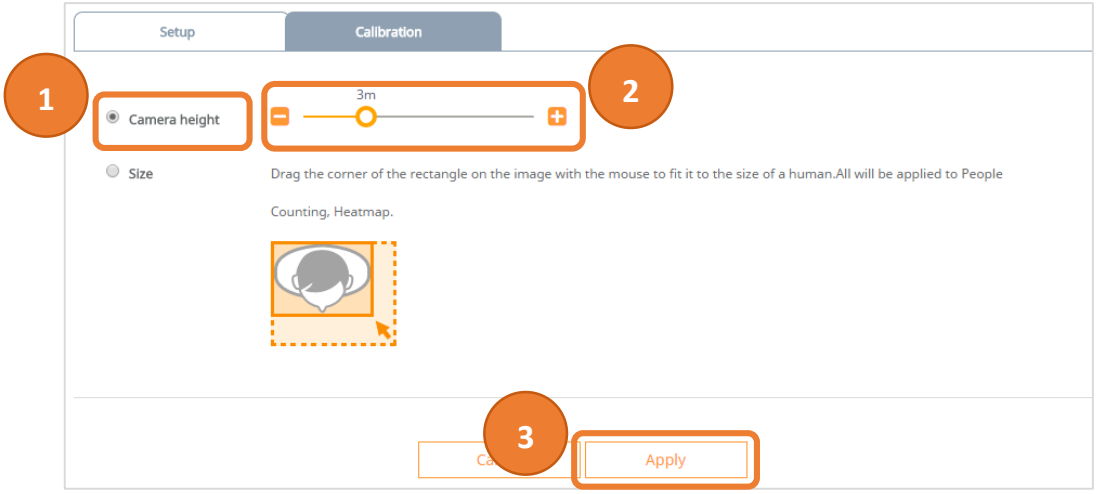

Figure 9. Calibration based camera height

Option 1)

- In web viewer, Setup → People Counting → Setup (Fig. 4) → Calibration (Fig. 9)
- Choose the ‘Camera height’ option.
- Drag the point or click +, - button for camera height setting then apply.

Option 2)

- Choose the ‘Size’ option.
- Drag and adjust the size of square on video.

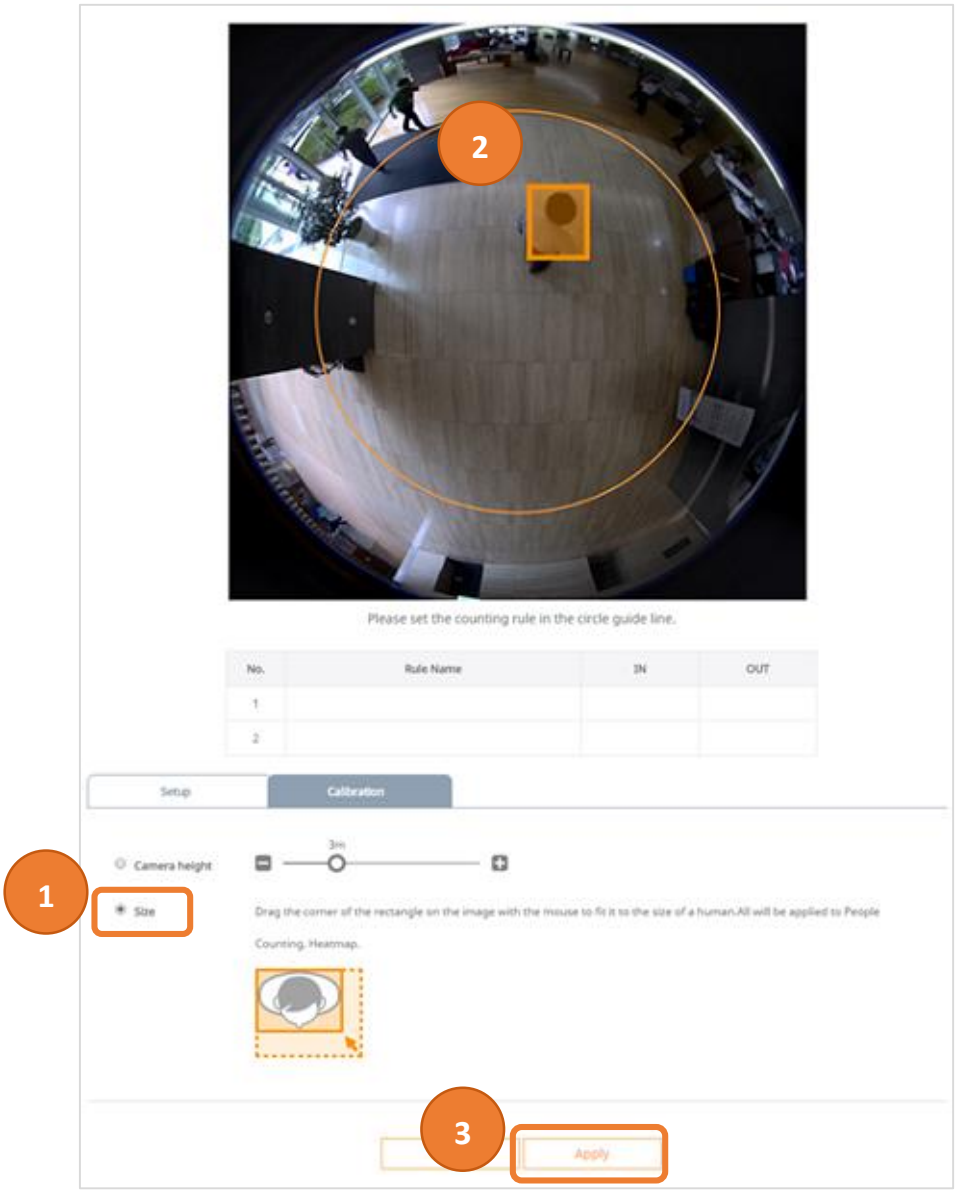

Figure 10. Calibration based people size in video

3. 3. People Counting Report

- In web viewer, Setup → People Counting → Setup (Fig. 4) → Setup (Fig. 11)
- Check 'Use' box for Report.

It allows export the counting result (Excel format) to FTP or E-mail, also exporting schedule.

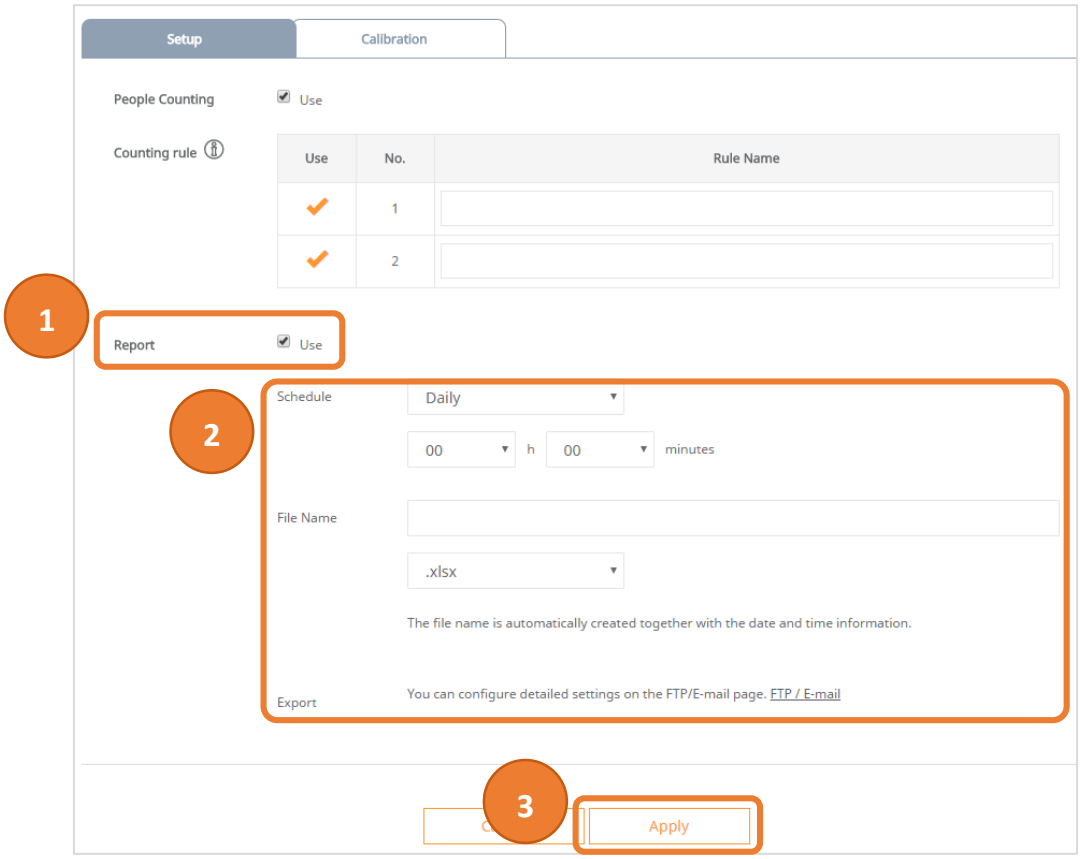

Figure 11. People count report setup

※ People counting accuracy is about 90% for normal camera and 85% for fisheye camera when a camera is properly installed and configured as guided in instructions and notice. (In "2. Camera Installation Instructions" and "5. Notice")

4. Heatmap

Hanwha Techwin heatmap feature reflects the index of moving people on video and it helps users to recognize a tendency of moving people intuitively.

4. 1. Heatmap Setup

It is easy to setup heatmap. Please refer to below figure. 12.

・In web viewer, Setup → Heatmap → Check 'Use' box for Heatmap (①) → Click 'Apply' (②)

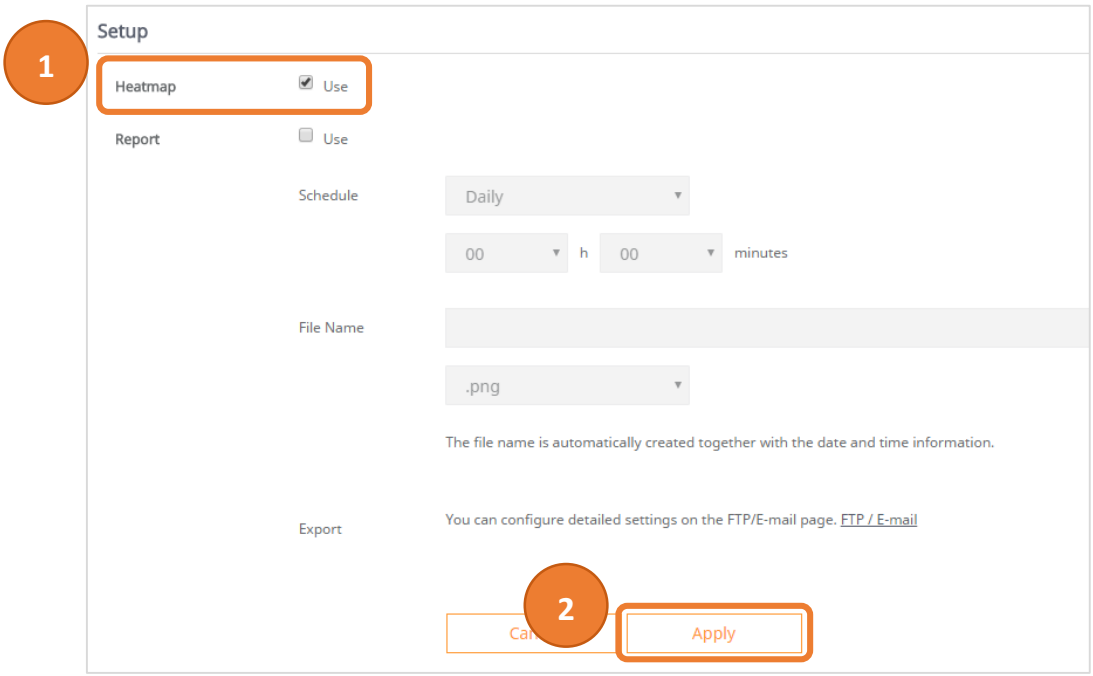

Figure 12. Heatmap Setup

4. Heatmap

In statistics page, it is able to view how heatmap displayed on video as below figure 13.

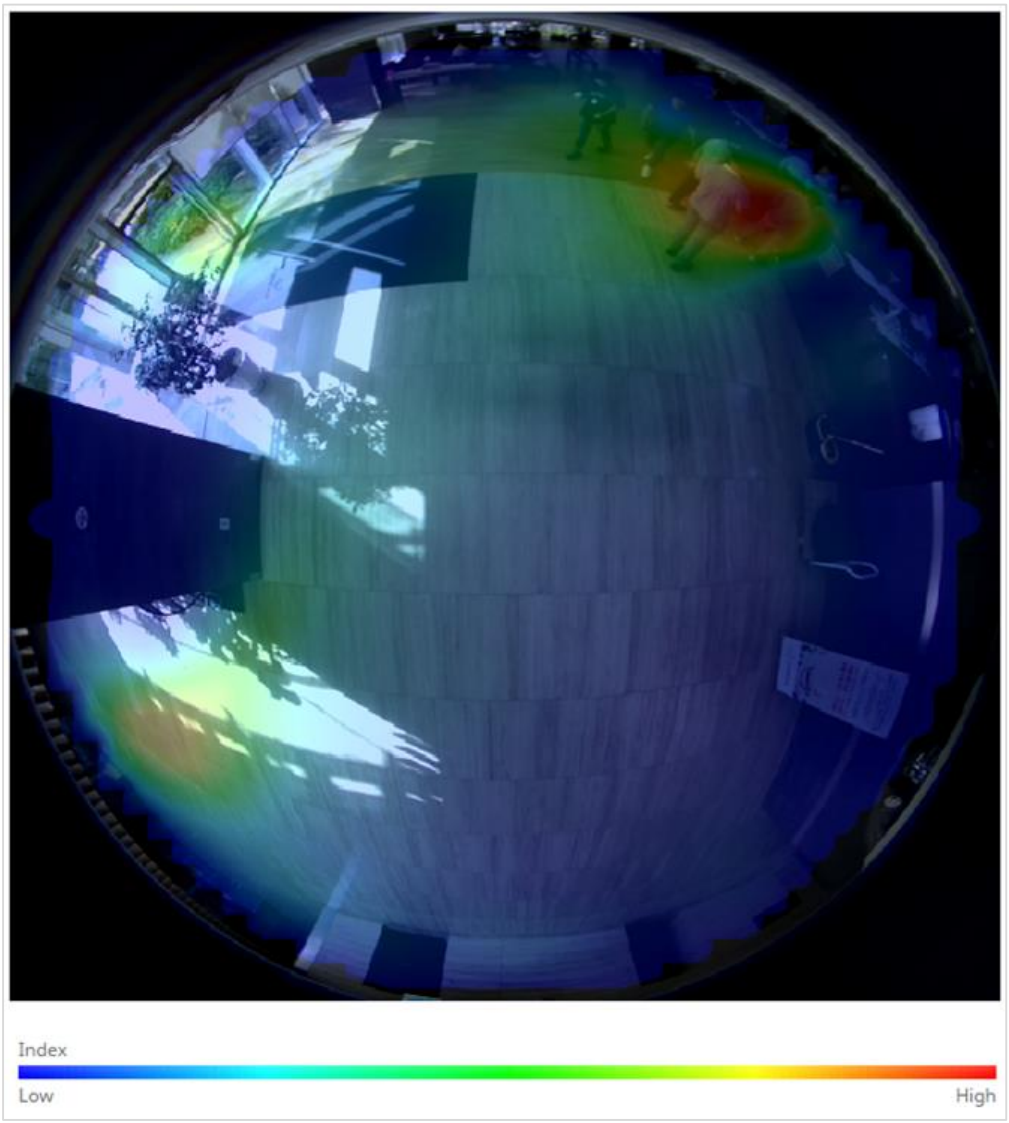

Figure 13. Example of heatmap with fisheye camera

4. 2. Heatmap Report

Heatmap statistics data and search function instruction is in user manual. Following is an additional instruction to help understanding.

- In web viewer, Setup → Heatmap → Setup
- Check 'Use' box for Report (①) → Click 'Apply' (②)

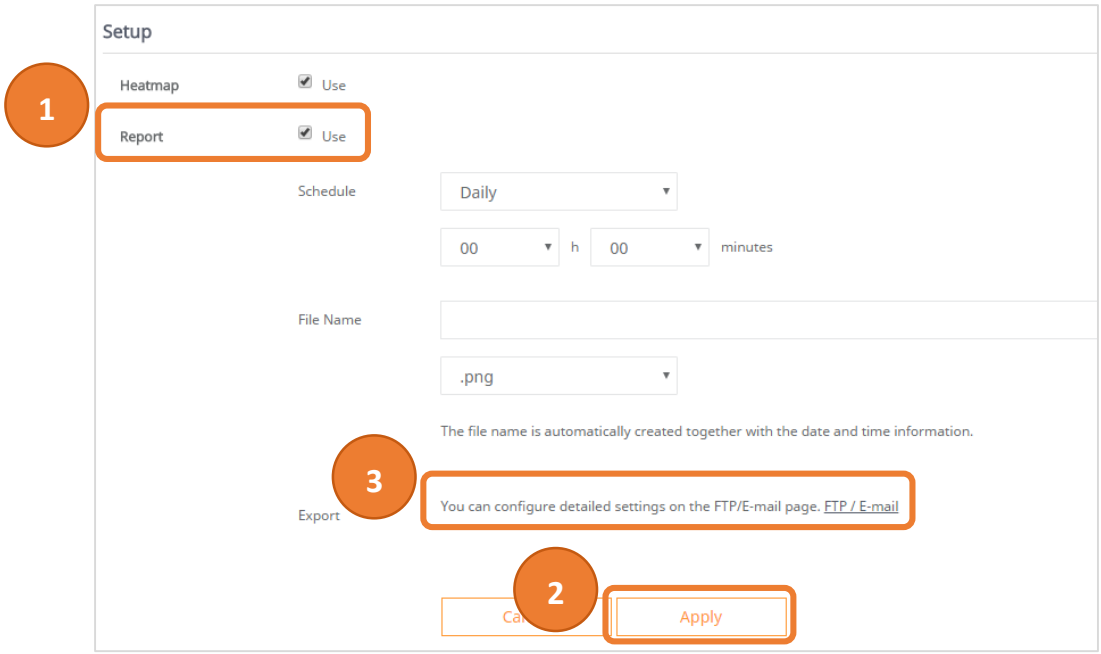

Figure 14. Heatmap Report Setup

Heatmap result image export is available through FTP and E-mail on a schedule. It is abled to schedule export by both daily and days of the week. Please refer to the user manual for more instructions of FTP and E-mail setup.

5. Notice

People counting and heatmap features provide statistical data rather then real-time data and any other moving object can be detected and included to the data. Please refer to the below cases may cause measurement error.

- People who move in a group (It can be counted as one person.)
- People or a person who staying around virtual line (counting rule)
- Virtual line that set outside of guide line (Fig. 7, orange line)
- Too much difference in object size between actual and configured size
  Actual size 〉 Configured size : Possibility of higher measurement
  Actual size 〈 Configured size : Possibility of lower measurement
- Too much difference in camera height between actual and configured value

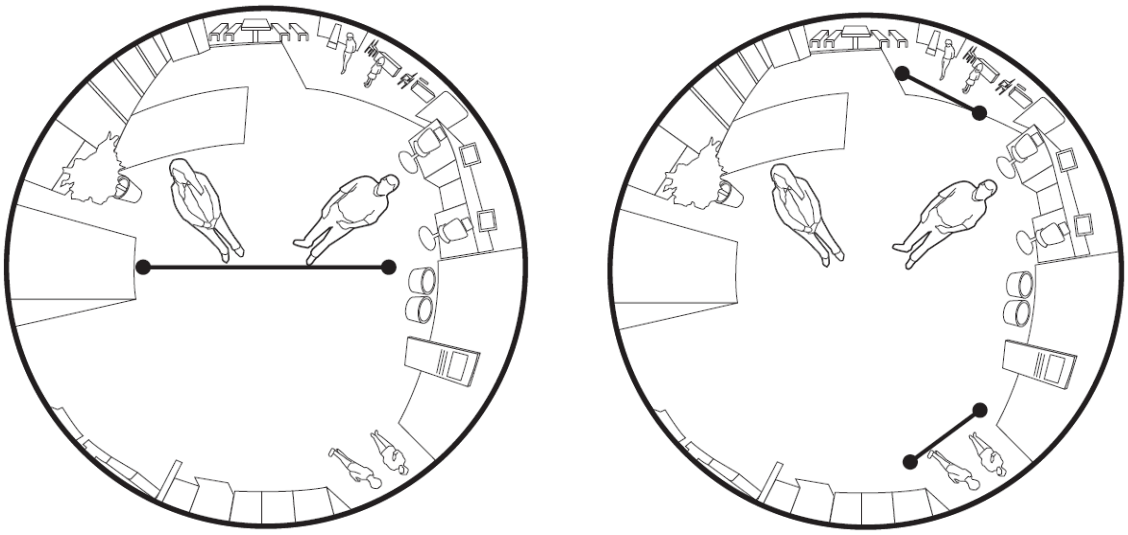

Figure 15. Good (left) and bad (right) example of fisheye camera counting rule

5. Notice

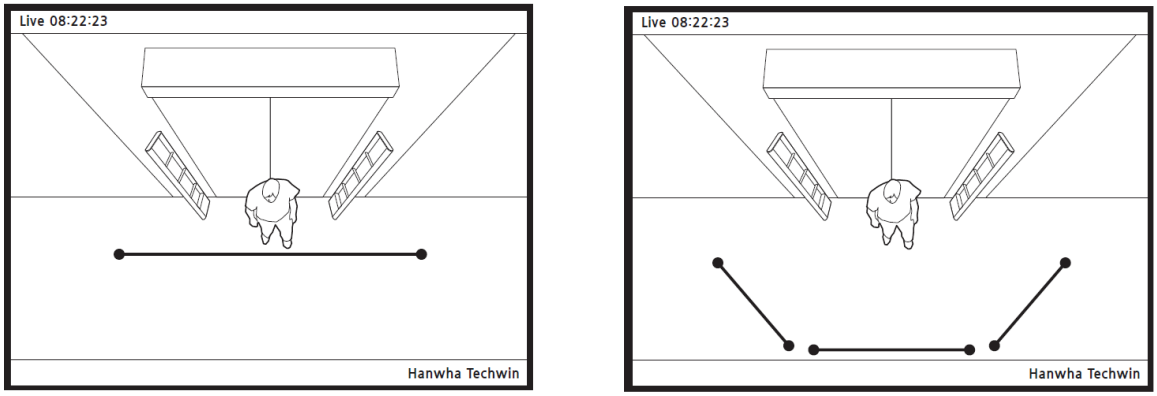

Figure 16. Good (left) and bad (right) example of normal camera counting rule

6. Conclusion

Hanwha Techwin people counting and heatmap features provide visible information such as graph and table about moving object in sight. Also, the all features are easy to use through intuitive web viewer.

In addition, Hanwha Techwin will put its best effort on video analytic features to make the best use of camera and expect to contribute to information gathering and analysis beyond video surveillance.

WISENET

Hanwha Techwin Co.,Ltd.

1204, Changwon-daero, Seongsan-gu, Changwon-si,

Gyeongsangnam-do, 51542, Republic of Korea

TEL 02.729.2900 FAX 02.729.2904

www.hanwhatechwin.com

Hanwha Techwin