Automatic optimal coverage with PTZ cameras

Background

A PTZ camera is a camera that is capable of remote directional and zoom control. In video surveillance these kind of cameras are commonly used. With a joystick, an operator can for instance follow a suspicious person and zoom in and out as needed to get the needed image details.

One problem with PTZ cameras is however that while pointing it in one direction, something interesting might happen in another direction. Even if there are several PTZ cameras covering the same or part of the same area, the operator might miss something of interest simply because they currently do not cover the entire area of interest. Therefore, it would be interesting if the video surveillance system somehow could make the PTZ cameras collaborate in such a way that the entire area is covered as much as possible. The operator should still be able manually to change direction and zoom of one PTZ camera with his joystick. In this case, the other PTZ cameras should then communicate and ensure that they still cover the area in an optimal way.

The project

In this project, we want to investigate how to make an algorithm that can make a number of PTZ cameras collaborate in such a way that the area of interest is always optimally covered even if the operator chooses manually to change direction and zoom of one of the cameras.

Going one-step further, it would also be interesting if the system could somehow make the PTZ cameras collaborate on following objects / areas of motion. This should of course be done in such a way that the entire area is still covered by other cameras.

One challenge in doing this is in how to calibrate the PTZ cameras. The calibration must be something that is easy to do and should not require real world position measurements.

It is expected that a standalone prototype of the proposed algorithm is implemented that shows how at least four PTZ cameras will collaborate in order to ensure optimal coverage. It is also expected that an analysis is made of how robust the algorithm is with real life examples.

Contact information
John Madsen
jm@milestone.dk
Mobile: +45 25 606 743

milestone
The open platform company