



Empty Vehicle Detection with Video Analytics

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Who we are

- Aitek S.p.A. is a private company founded in 1986, leader in design and development of innovative technological application platforms.
- The company has gained significant experiences in the developing solutions for automated tolling systems, video surveillance and digital signage for communication.
- Headquarters in Genova. Branch offices in Savona (IT) sister company in Brummen - NL (Aitek BV) and Lisbon – PT (Observit Ltd.)
- Aitek's staff consists of more than 40 persons, 75% engineers.
- In 2013 Aitek has reached a turnover of 3.2 Million Euro.



What we do

Aitek is a software solution provider for the different transportation market segments:

- roads & motorway: toll systems, infomobility systems, road network video monitoring and incident detection, ANPR;
- metro & railway: video surveillance and video analytics, digital signage;
- ports: ISPS security systems, terminal gate automation;
- local public transport: on board video surveillance and communication;
- ships: on board video surveillance for military applications, on board entertainment systems.



The video capabilities

AiVu is the video surveillance and video analytics software platforms entirely internally developed.

In the metro and rail domain AiVu gained significant references thank to the long lasting cooperation with Ansaldo STS in national and transnational projects:

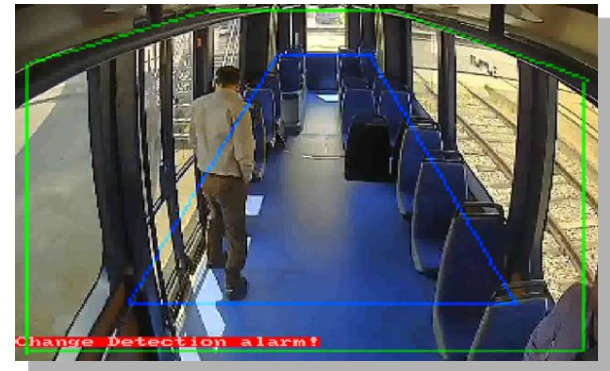
- Integration with SMS Security Manager - Palermo railway junction - for adding video analytics capability to the stations video surveillance system.
- Integration with the SMS Security Manager for video surveillance and video analytics of the Copenhagen (DK) Cityringen.
- Integration with the SMS Security Manager for video surveillance – Etihad Rail Phase 1.

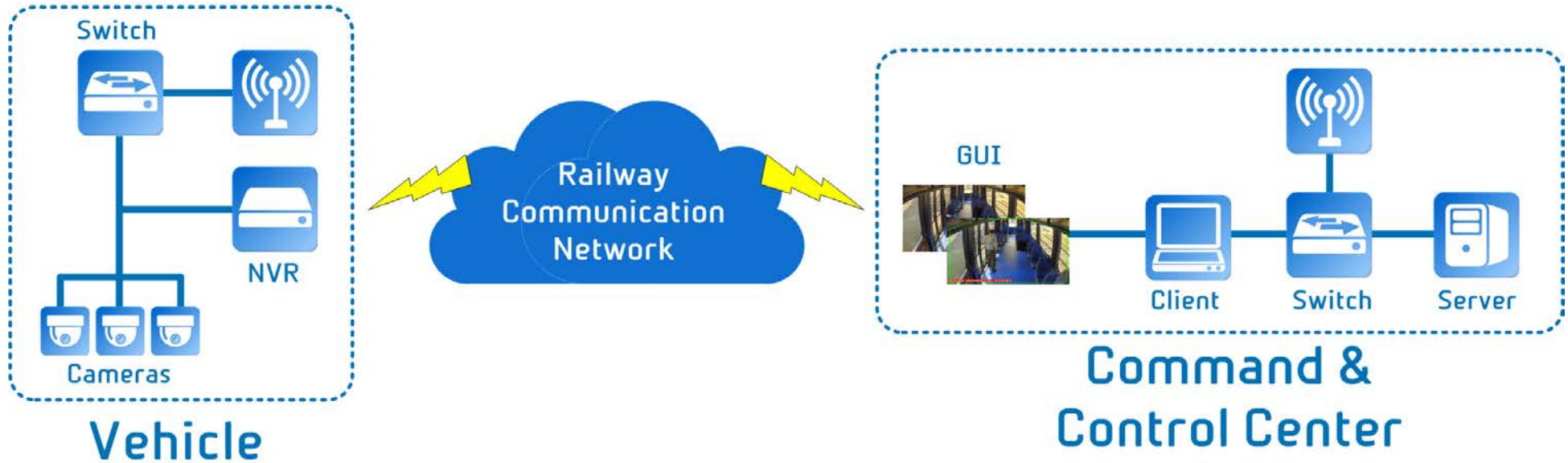


Empty Vehicle Detection

Motivation: to prevent access of unauthorized people to the depot or other restricted areas

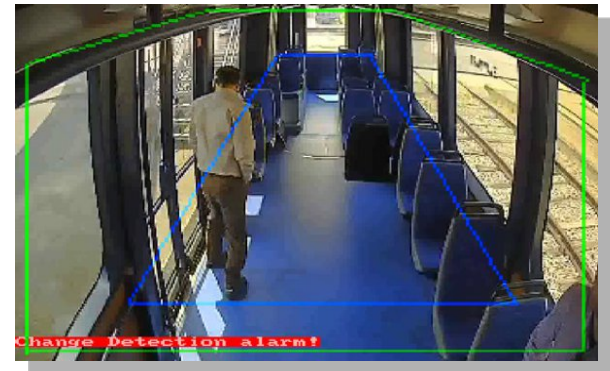
- Environment: driverless train
- Solution: On board video analytics
- Advantages: is a cost effective solution - use of already existing hardware (cameras, videorecorders)





The Algorithm

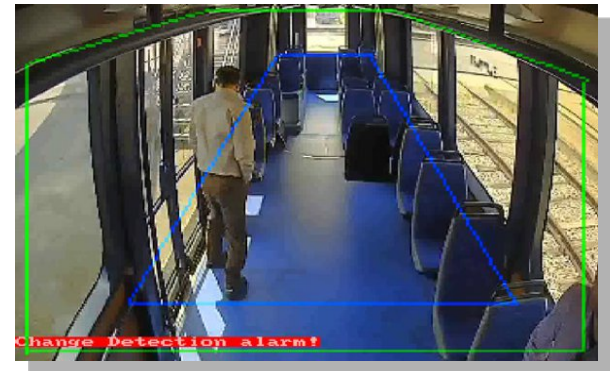
- The Empty Vehicle detection algorithm is designed to detect the presence of objects and/or people in a monitored area inside a coach of a passenger train.
- It combines motion detection techniques with image difference with a “reference” image.
- It works in asynchronous mode, driven by users request



Results & Conclusions

- It is actually been tested in controlled environment (non operating coach).
- Results and technical issue are described in [1].
- It will be tested in real environment with two camera per coach.
- If higher reliability is needed can be used in combination with other technology (I.R., microwave, thermal...).

[1] ICIAP 2013 - “Empty Vehicle Detection with Video Analytics” - F.Buemi, M.Esposito, F.Flammini, N.Mazzocca, C.Pragliola and M.Spirito



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Live Demonstration

