Video Analytics Solutions

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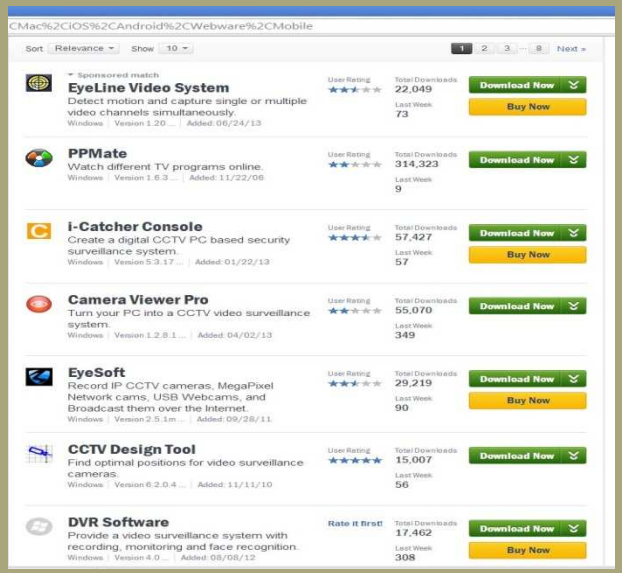
Where we are today

- Many cameras
- Some are dummies
- Few are streaming to screens with no watchers
- Few are streaming videos to be stored
- Few are watched, sometimes.

What is wrong with this?

- Much money spent on cameras, monitors, installation, config, etc…
- Some money allocated for maintenance
- Often, videos are not watched or never get processed
- Wasted investments and potential benefits

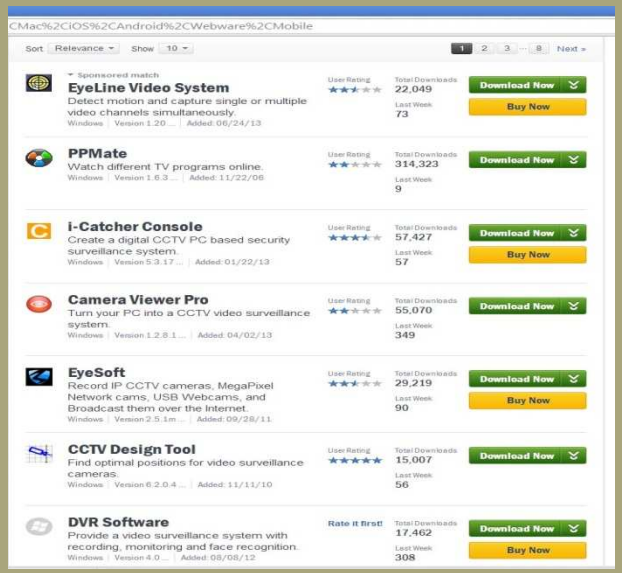
How we put video cameras to use



Current common practice

- Buy cameras
- Buy accompanying software
- Hire security personnel to watch the video streams

How we put video cameras to use



Current common practice

- Buy cameras
- Buy accompanying software
- Record video streams on hard drives

Our vision

Making video data useful through analytics

How to really put video cameras to use?

Best practice

- Buy cameras
- Buy a Video Management System (VMS)
- Buy analytics modules for the VMS as needed

Environment	Analytics modules				
	Fire detection	Fighting detection	Auto collision	Intrusion detection	…
Home	✓	×	×	✓	
Small office	✓	×	×	✓	
Large enterprise	✓	✓	✓	✓	
Government building	✓	✓	×	✓	
Public park	✓	✓	×	×	
…					

Pros and cons: Common practice

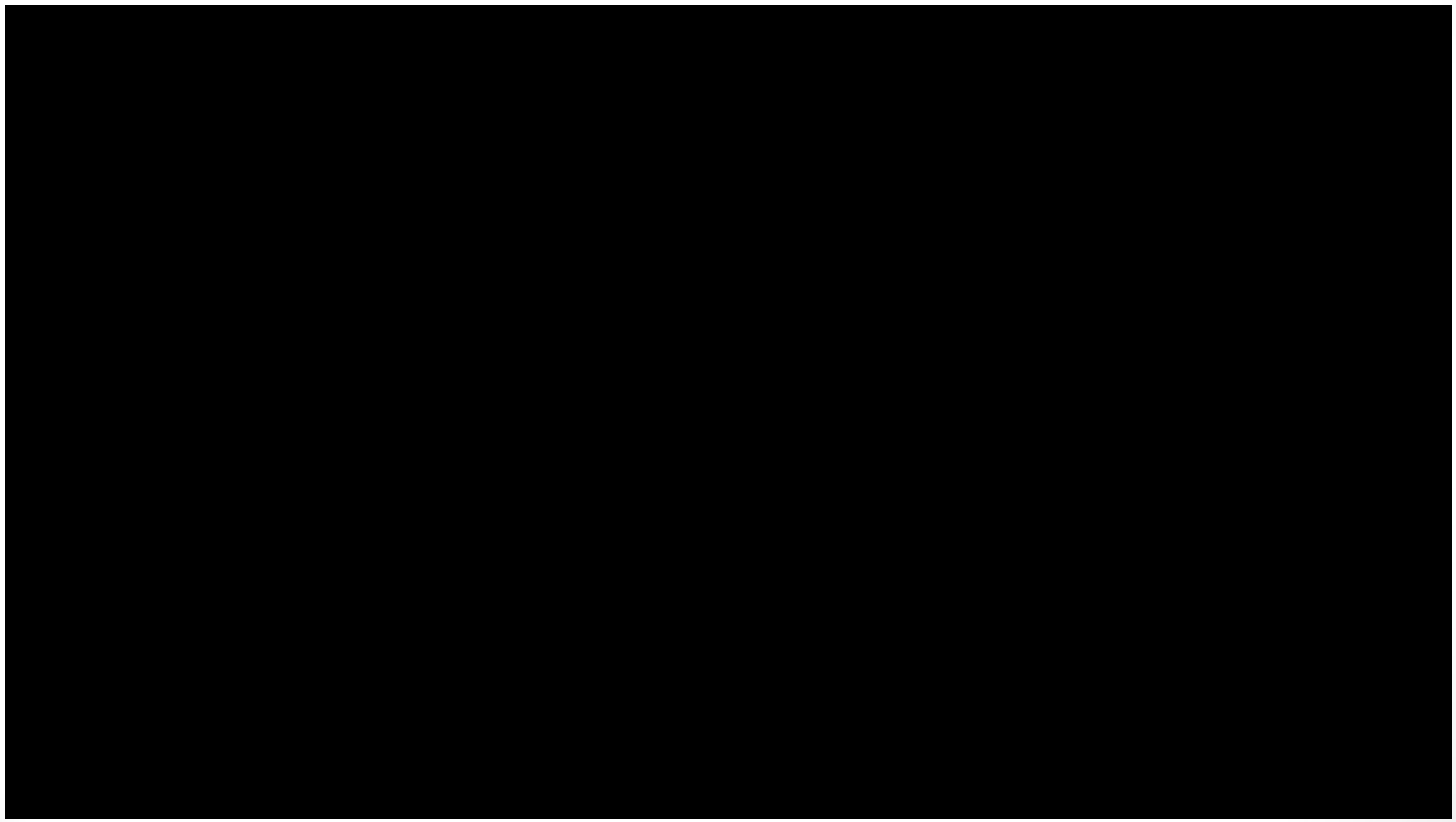
- Pros
  - Easy to set up and operate
- Cons
  - Security personnel may not catch interesting events
  - Accompanying software is rarely updated
  - Reconfiguration is usually inflexible

Pros and cons: Best practice

- Pros
  - Automatic event detection via computer algorithms
  - Configurable analytics software
  - Buy only the needed modules
  - Convenient software updates
  - Flexible budget and procurement
  - Integrated system

- Cons
  - Initial investment
  - Security processes may need to be changed

Our portfolio



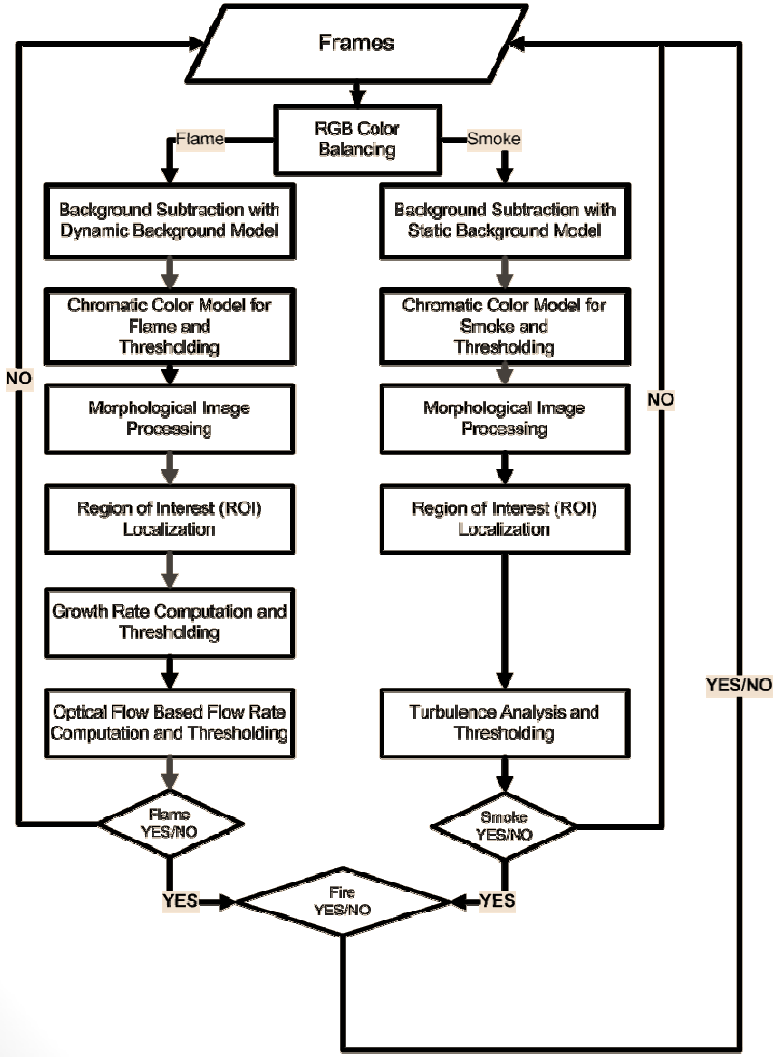
Our capabilities

- Build new analytics
- Customize existing analytics modules
- Integrate with any VMS with a sufficiently capable analytics API/SDK.
- Deliver standalone VMS/analytics solution
- Integrate our system in your enterprise datacenter
- Integrate our system with your enterprise in the cloud

A few relevant funded projects

- Suspicious behavior detection (Royal Thai Government, AIT, Royal Thai Army)
- Police Eyes illegal lane change enforcement (NECTEC, Traffic Police Department, Royal Thai Police)
- Driver Awareness driver driving behavior monitoring system (NECTEC)
- Automated Ticketing System (Thailand Research Fund, with Naresuan University)
- OpenCCTV Platform VMS-Analytics integration middleware (NECTEC)
- Human and Vehicle Counting (Pattaya Municipality, with MAPPER)
- Narai Military Camp, Lopburi, fire and smoke detection, intrusion detection, license plate tracking (Royal Thai Army)

Example: QuickBlaze: Early Smoke and Fire Detection Using Video Processing



- Idea: use video cameras as outdoor smoke and fire alarms in sensitive areas
- Currently planning a deployment at Narai Military Camp, Lopburi, Thailand, to protect ammunition storage buildings

QuickBlaze Outperforms Commercial Video Based Fire Alarm System (VisiFire)

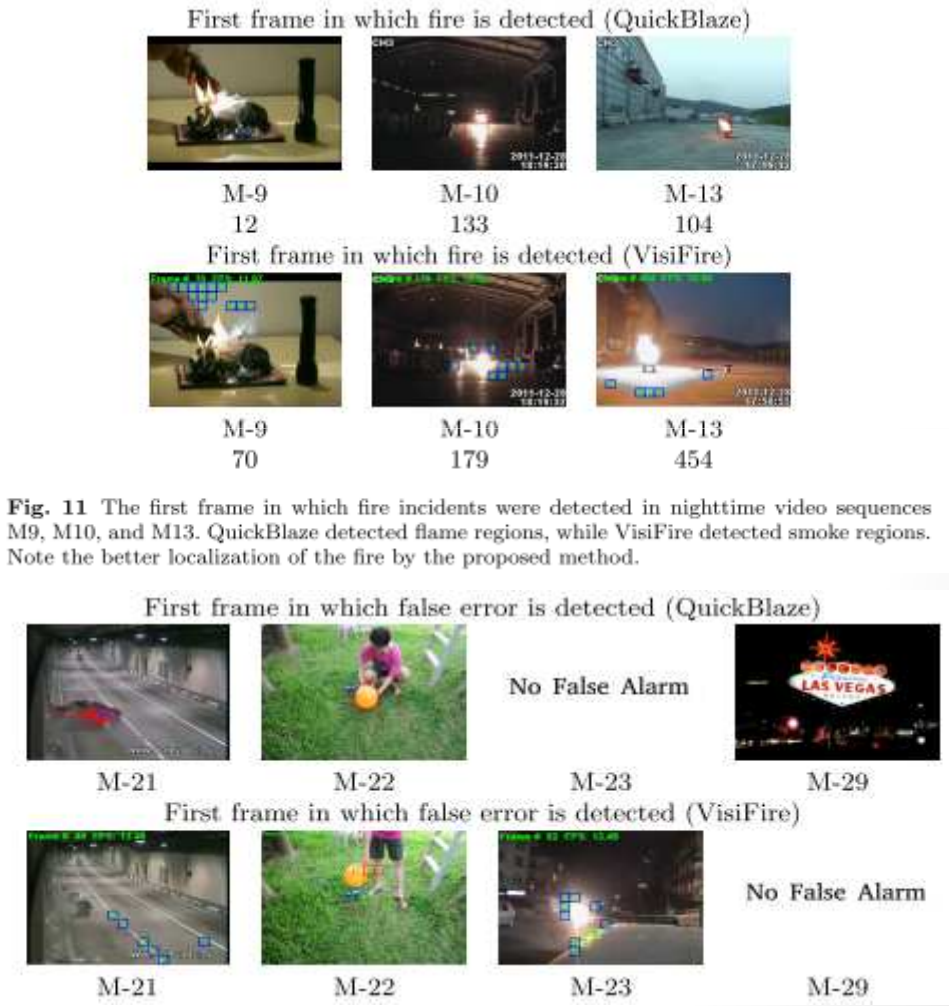


Fig. 11 The first frame in which fire incidents were detected in nighttime video sequences M9, M10, and M13. QuickBlaze detected flame regions, while VisiFire detected smoke regions. Note the better localization of the fire by the proposed method.

- Research paper under review at Springer's *Fire Technology* journal

Example: Intrusion Detection

Define processing region

Input frame

- Currently planning a deployment at Narai Military Camp, Lopburi, Thailand, to protect ammunition storage buildings

Team

- Matthew Dailey, Associate Professor, AIT
  - Video and image processing
  - Object tracking, recognition
  - Statistical modeling
  - Software Engineering
- Mongkol Ekpanyapong, Assistant Professor, AIT
  - Embedded systems
  - Microelectronics
  - System design and integration
- Supakorn Siddhichai, Researcher, NECTEC
  - Video and image processing
  - System integration

Team

- Ramesh Marikhu, Senior Research Associate, AIT
  - Video and image processing
  - Object tracking, recognition
  - Software Engineering
- Jednipat Moonrinta, Research Associate, AIT
  - Video and image processing
  - Object tracking, recognition
  - Software Engineering
- Vasan Timtong, Research Associate, AIT
  - Video and image processing
  - Object tracking, recognition
  - Software Engineering

Supporters

- NECTEC/NSTDA
- Thailand Research Fund
- Royal Thai Government
- Royal Thai Police
- Royal Thai Army

If you put video to good use,

- Security will increase
- Monitoring costs will decrease
- Impact of human error will decrease
- Initial investment will add value to your organization