NexTech 2010
October 25-30 Florence, Italy

Tutorial

Surveillance Technologies
Beyond State-of-the-Art

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Dr. R. Reda, ICTmc
Topics:

Advanced Surveillance Techniques
Communication Technologies for Surveillance
Processing Power driving Surveillance Business
Multi-Sensor Surveillance Technologies
Surveillance and Physical / Cyber Security
Smart Home & Home Security
Satellite Surveillance
System Overview

Privacy Protection System

- Video Encryption Unit
- Obfuscator
- Background segmentation
- Mean Shift Tracker

Multiplexing Video Server

Video Management System

Camera

original encrypted video

video with obfuscated persons
Application: UltiNet

Intelligent Video Surveillance

Advanced GPS Unit

Traffic Signal System

Network

Transport Process

Traffic Control

Central Processing

RDS / AGPS

Environment Authoring

Intelligent Traffic Signal
Application: M.East

Security Management Process

Physical Security
- Security against natural disaster
- Physical Access Control

Operational Security
- Design of right perimeters
- Operational Processes
- Backup & Restore
- Administration & Configuration

Application Security
- SW development SW complexity
- Change Control

Network Security
- Cryptography
- Identity Management
- Security Models
- Analysis & differentiation
- Security Measures (DMZ, tunnels, ...)

Access Control

Availability
Confidentiality
Integrity
Tracking Algorithms

Main Tracking Algorithm

Blob-Based

Mean Shift

Segmentation

Kernel - Based

Color based

Template based

Feature based

Model based

...
Future Applications of AVSS
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Advanced Surveillance Techniques:

Security Management Process
Video Surveillance Local Control
Nearly Indestructible System
Wireless Self-contained VS Unit
AVSLC

Critical I/S

1
2
3
4

8
12
21
33

ICTmc
AVSLC and the Security Management Process
Application: UltiNet
Application: M.East
Tracking Algorithms

Main Tracking Algorithm

- Blob-Based
  - Segmentation
    - Color based
    - Model based
  - Feature based
- Mean Shift
  - Kernel-Based
    - Template based
    - \ldots
AVS System Architecture
AVS- Atate-Prevent-Evenf

P1  baffle  Threat  Detect - report  Supress

P2  minimize  Attack/Sabotage  Impede

P3  confine  Damage/Injury  Amendment  Recovery & Feedback

VSDB
Advanced Surveillance Techniques:

Security Management Process
Video Surveillance Local Control
Nearly Indestructible System
Wireless Self-contained VS Unit
WSSU: Wireless Self-contained Surveillance Units

General Structure
WSSU: Seamless IP Network Connection for VS Applications
VS System with WSSU & AVSLC
Thank you, Florian Matusek

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