



Meleagros
fire protection system

Integrated fire protection system

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Innovation
that
works



Meleagros

- An integrated fire protection system
 - Video smoke and flame detection
 - Admin application for crisis management
 - Fire simulation engine
- Suitable for many application domains
 - Forests and natural heritage, Plants and Industrial Facilities, Warehouses, Malls, Monuments, Vacation homes, ...



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Why video fire detection?

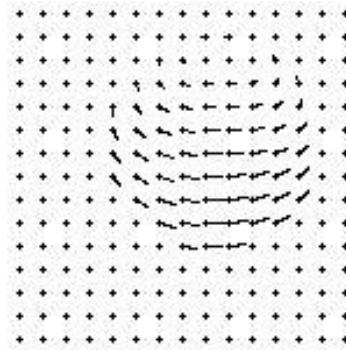
- Open or large space fire monitoring is not efficient and cost-effective with other means:
 - Satellite, sensors, ...
- Allows for visual verification of events
- Can work with commodity hardware
- Other events can be simultaneously detected

Video fire detection

- Basic detection methods
 - Motion detection
 - Color detection
 - Geometry detection

Video motion detection

- Three basic techniques
 - Background subtraction
 - Difference of two successive frames
 - Optical flow



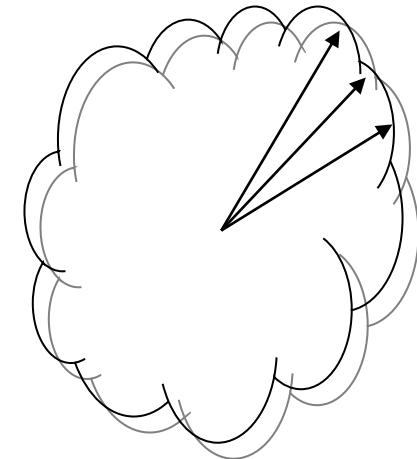
- Can be common for flames and smokes

Video color detection

- Based on color characteristics of flame or smoke
- Both RGB and YUV colorspaces can be used
- Flame and smoke colors may vary

Advanced detection methods

- Geometry characteristics
 - Smoke: turbulence characteristics
- Space and time variability of fire or smoke pixels
- Motion orientation
 - Smoke moves usually upwards
- Flame flickering



Original frame



Motion mask



Motion mask processed



Color mask



Color mask processed



Combination + other advanced detection algorithms



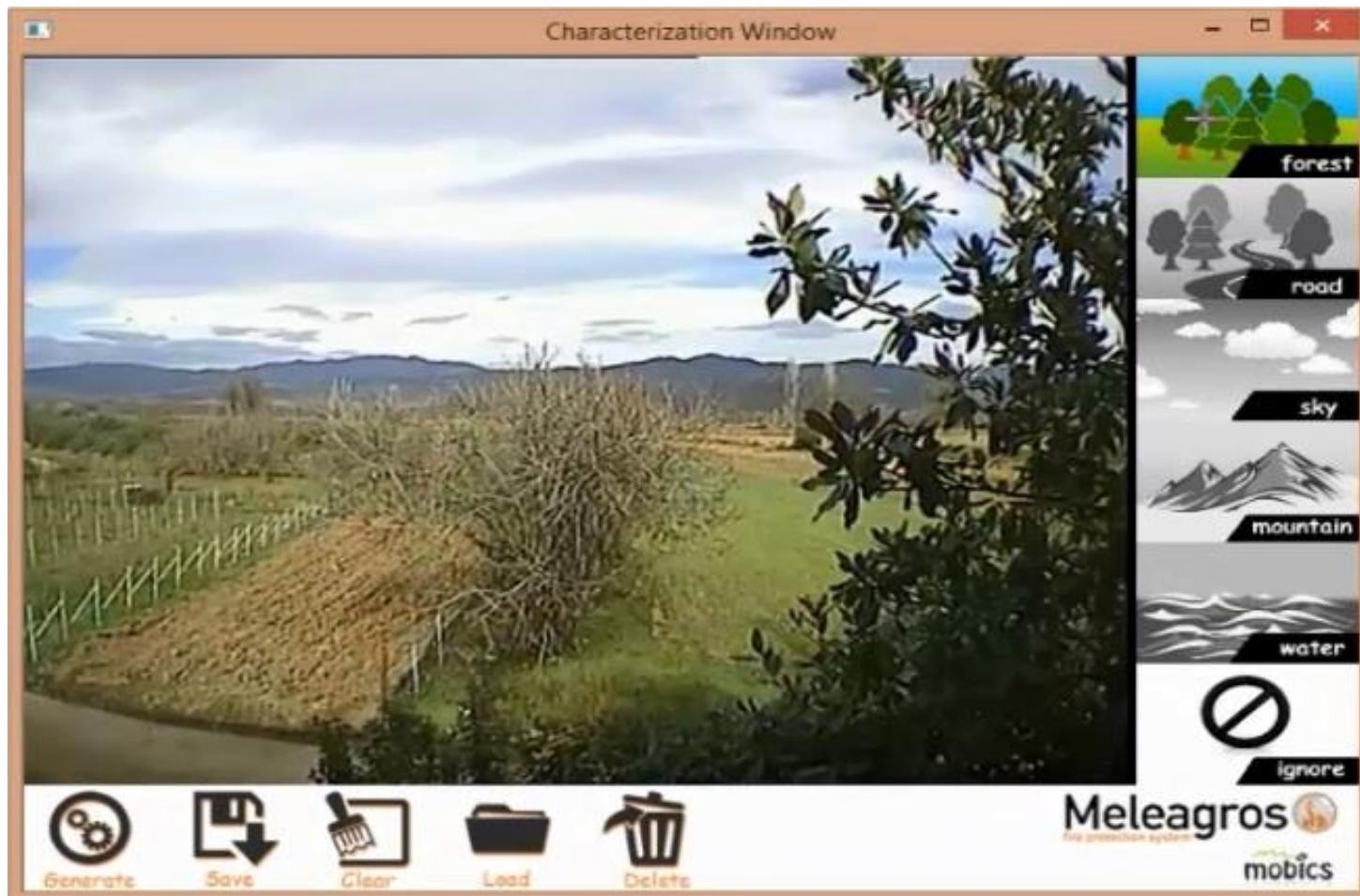
Alarm



Scene characterization

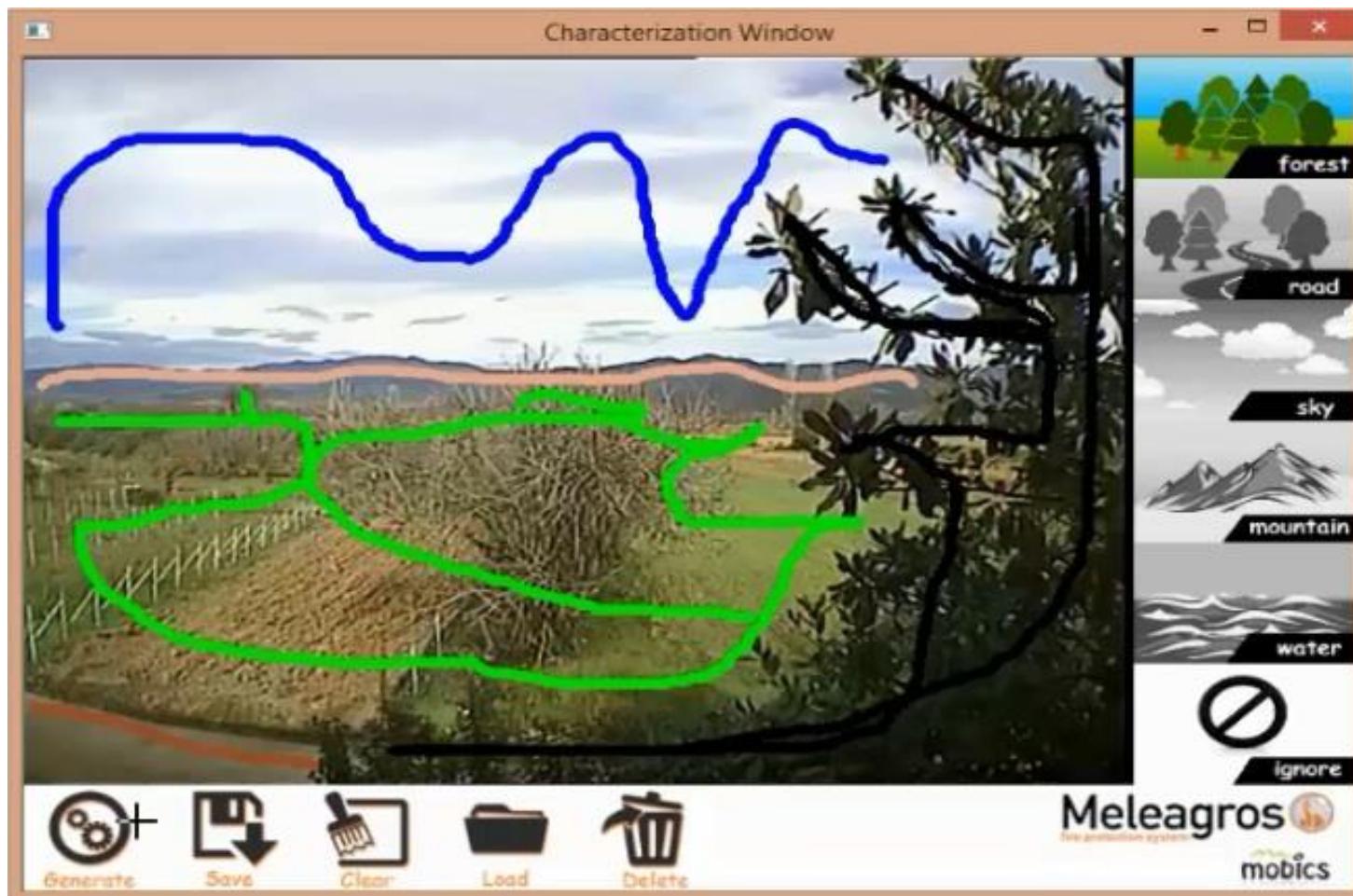
- Characterization of the scene (region of interest, ROI) regarding fuel types
- Speeds up the detection process while considerably reducing the false alarm rate
- Easy to use tool with predefined scene types (e.g. forest, sky, etc.) for image segmentation

Scene Characterization Tool



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Characterized Area

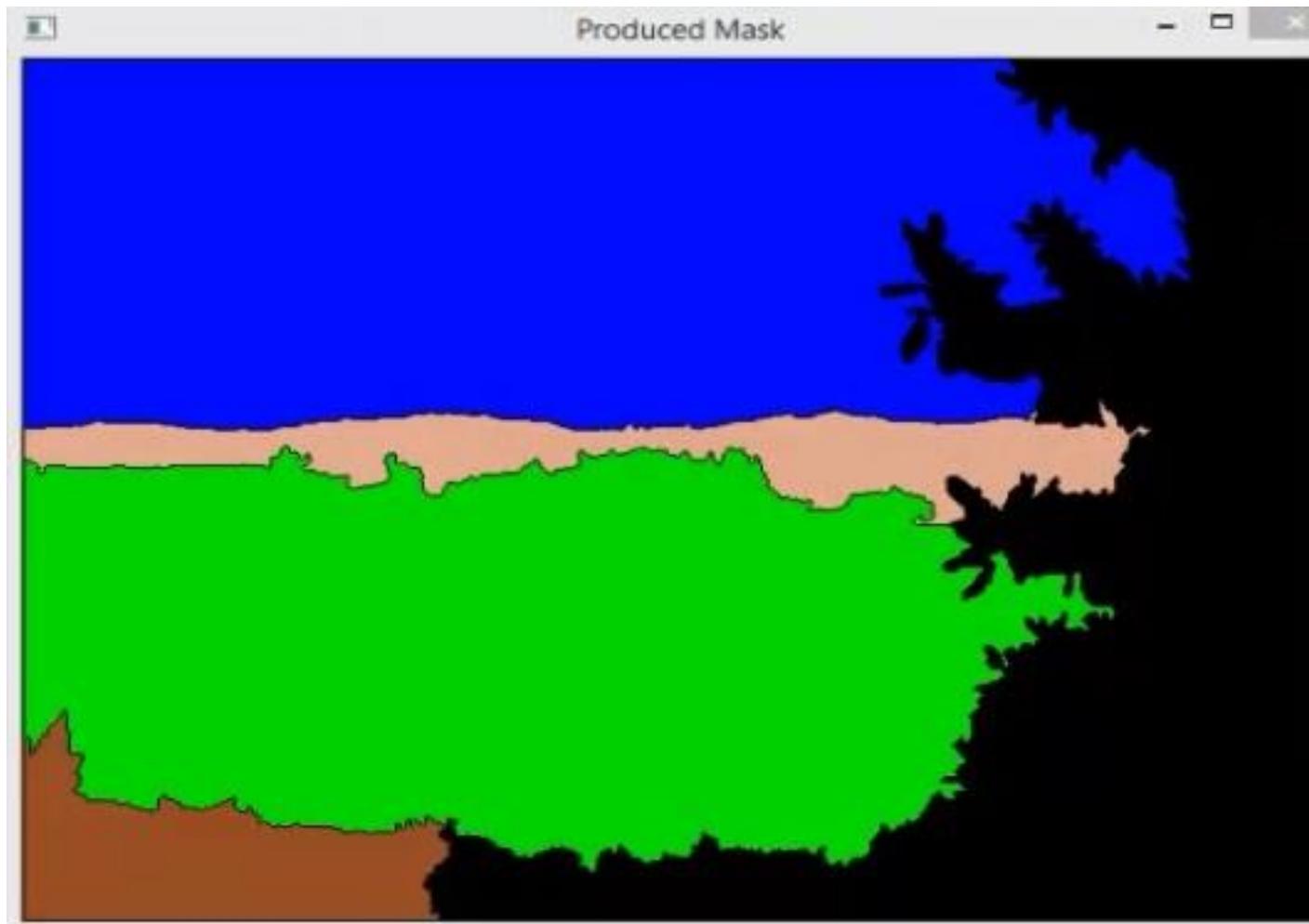


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Algorithm Output



Produced Mask



Control and Management

- Alerts and incidents
- Visual verification
- Equipment tracker
- Historical data
- Simulation engine

Control and Management

Meleagros | fire protection x localhost:9000/main

Meleagros fire protection system

Area monitoring Equipment History Simulation Crisis management LACU management Fusion algorithms

Refresh Map Refresh Alerts & Incidents

Google

Ayat Auk Psiloriti Str. Deligianni Στρ. Δελιγιάννη Str. Deligianni Στρ. Δελιγιάννη Str. Deligianni Στρ. Δελιγιάννη Str. Deligianni Στρ. Δελιγιάννη

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CONNECTION: OPEN

Alerts

Event	Time
cap:identifier	31-12-2014 11:00:00
cap:identifier	31-12-2001 11:00:00

Incidents

Event	Time	Edit
incident 1	02-05-2014 07:55:29	
incident 2	02-05-2014 07:54:46	
incident 3	30-04-2014 09:07:11	
incident 4	30-04-2014 09:06:45	
incident 5	30-04-2014 09:06:21	

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Fire Simulator

- Fire simulation tools
 - FARSITE
- Maps
 - Google maps, OpenStreetMap
- GIS
 - GRASS, Mapserver

Fire Simulator



Thank you!

More information on: www.meleagros.eu

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