Event Detection in Video

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Outline

- Motivation
- Application
- Formalization

Motivation

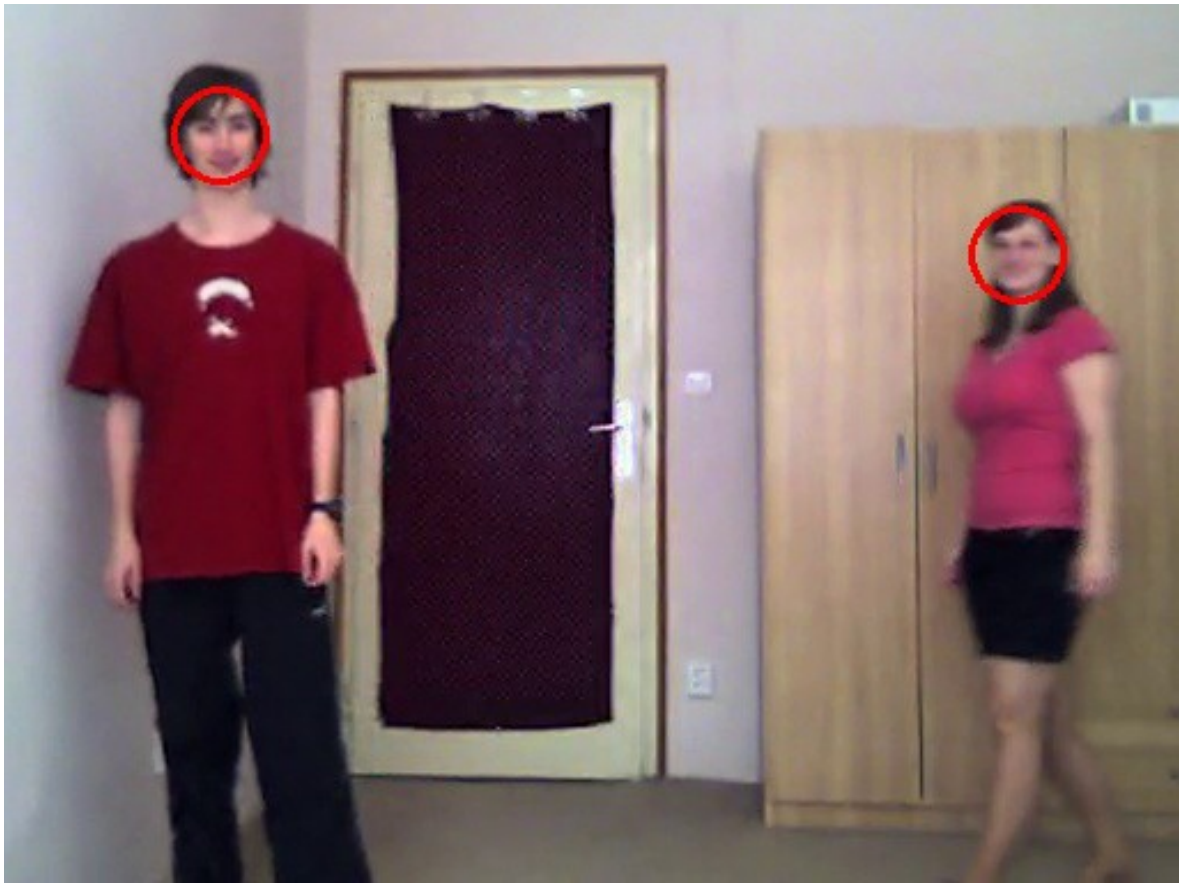
- Automatic surveillance video analysis
- Real-time alarms for suspicious behaviour

Staticflickr.com

Event Detection Application

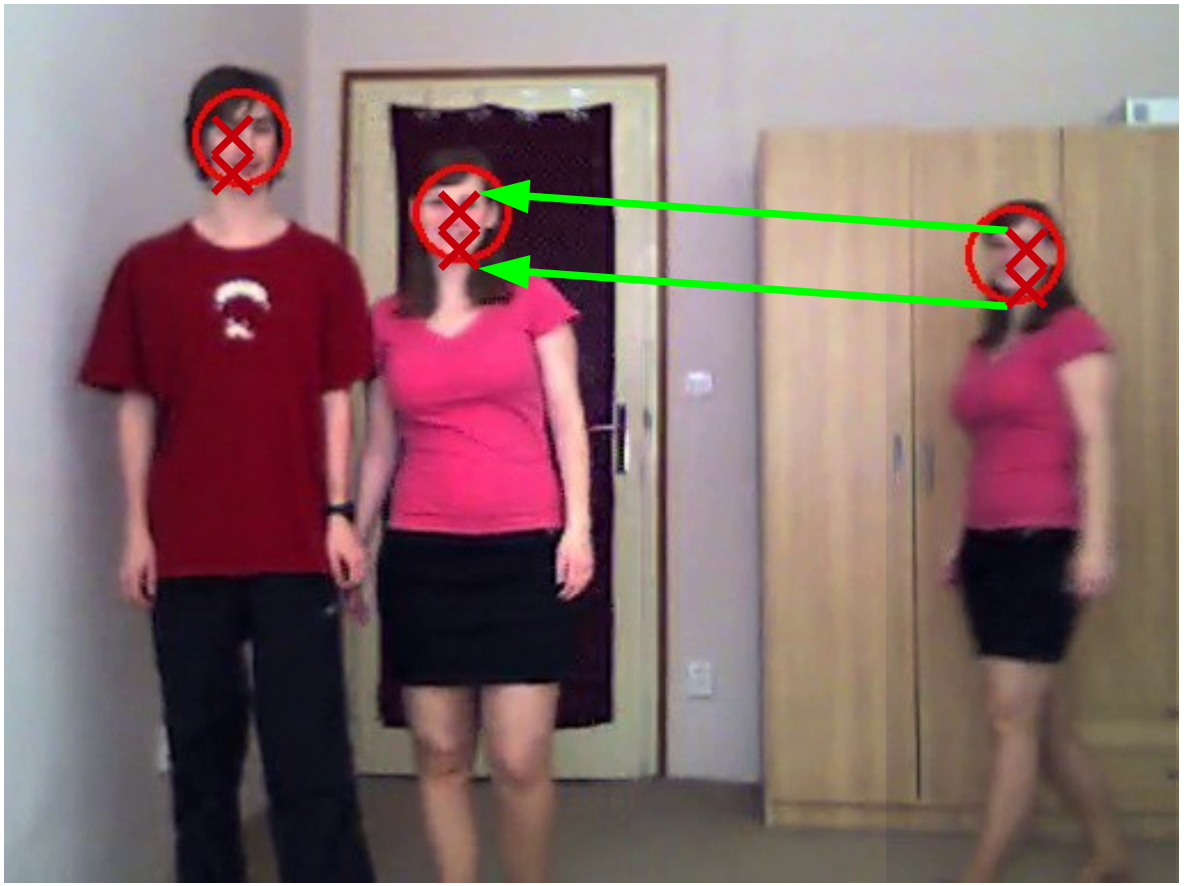
- People related events
  - Restricted area entrance
  - Waiting
  - Meeting
- Real-time detection
- OpenCV library
- Four-step event detection process

Person Detection



Tracked Point Selection

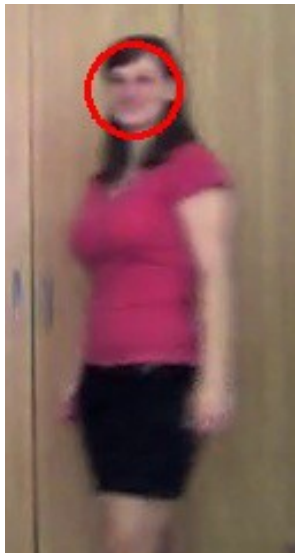
Person Tracking



Event Detection

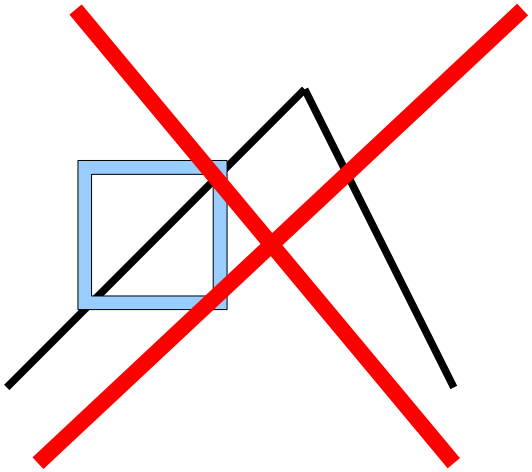
Person Detection

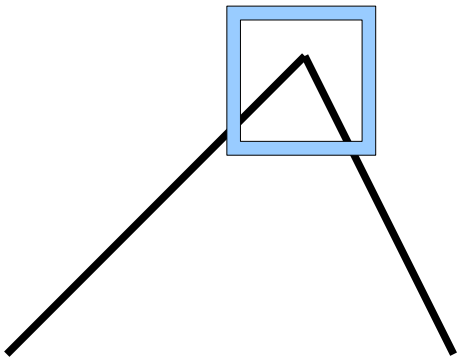
- Face detector
- No adaptation needed
- Easy detector replacement



Tracked Point Selection

- Well trackable points selected automatically
- Corners – easily indentifiable
  - Method by Shi and Tomasi



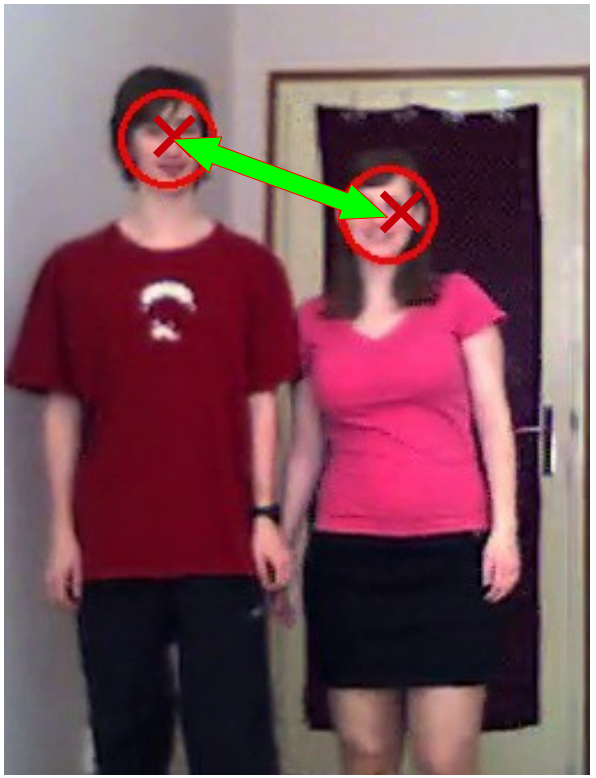


Person Tracking

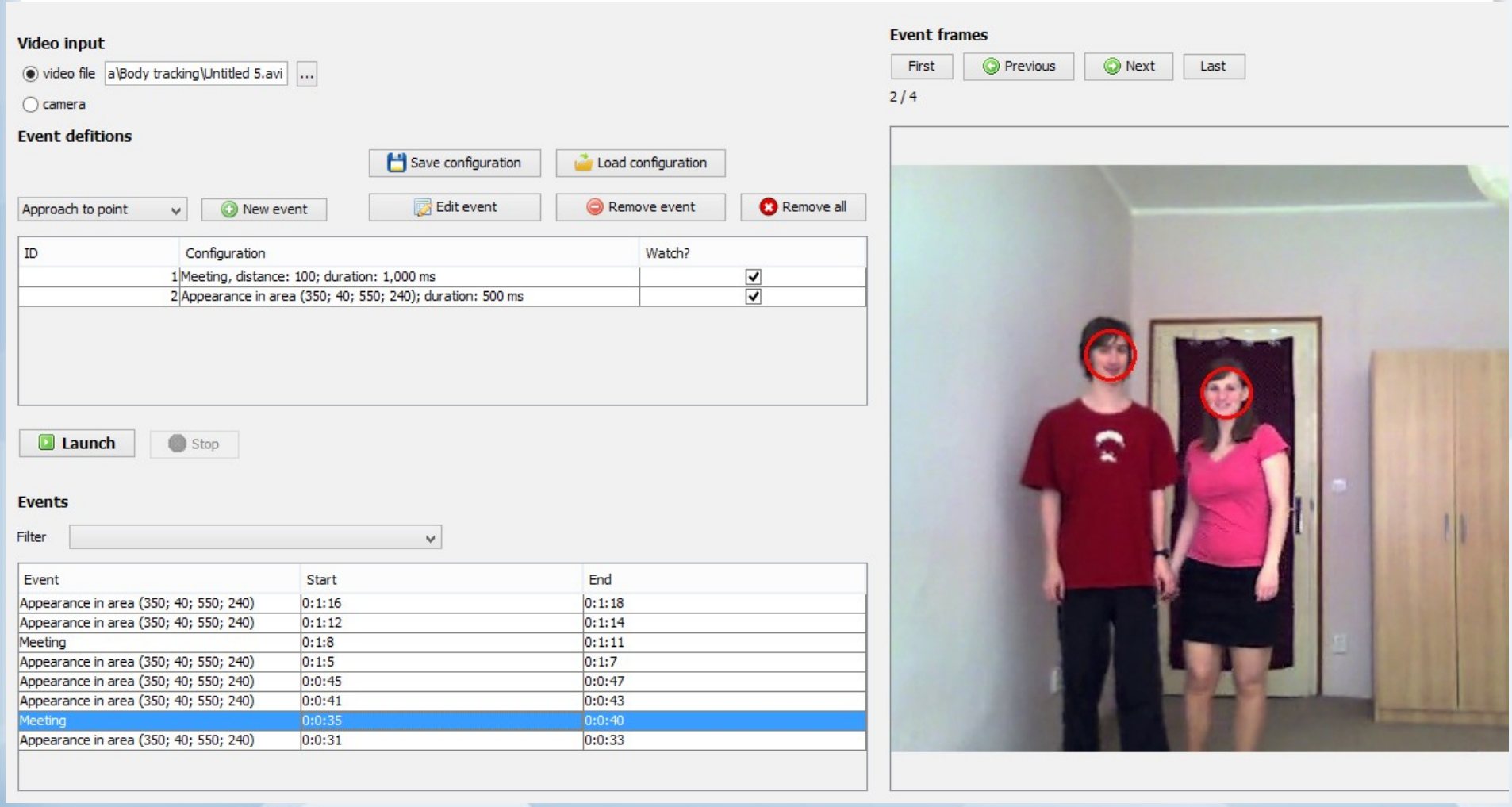
- Optical flow method – motion vectors
  - Lucas-Kanade algorithm
- A few points tracked → fast

Event Detection

- Only one reference point of each person
- Event types
  - Time related
  - Speed related
  - Place related
  - Meeting
  - Person identification
  - Combinations
    - concurrence, sequence



Application Screenshot



Formalization

- Event detector – function
- BasicEventDetector: Video $\rightarrow$ **P**(Event)
- AdvancedEventDetector: **P**(Event)^k $\rightarrow$ **P**(Event)

Summary

- Application for human tracking in video
- Real-time event detection
- Event detection formalization

Thank you for your attention.