LIÈGE université
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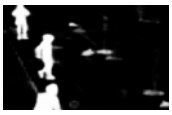
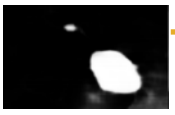
gesval s.a.

Semantic Background Substraction, an efficient motion detection in video using objects recognition



Semantic Background Subtraction was developed by M. Braham, S. Piérard and Prof. M. Van Droogenbroeck from the Telecommunications and Imaging Laboratory from Montefiore Institute, Department of Electrical Engineering and Computer Science of the University of Liège.

Semantic Background Subtraction can be used in a wide range of applications such as:

- **Computer Vision applications**
- **Video Surveillance**
- **Medical live imaging**
- **Autonomous vehicules**
- **Sport events video**

Demo available on: www.telecom.ulg.ac.be/semantic/

INTELLECTUAL PROPERTY

Semantic Background Subtraction is under a patent application process named Foreground and background detection method in Europe (Priority number(s): EP3438929A1).

The variant Asynchronous Semantic Background is also under a patent application process in the US (Priority number(s): US20190197696A1)

PARTNERSHIP SOUGHT

- Research cooperation agreement
- Licensing agreement

KEY ACHIEVEMENTS

- Semantic Background Subtraction is a novel framework for motion detection in video sequences
- It leverages object-level semantics (object recognition) to address the variety of challenging scenarios for background subtraction
- In order to incorporate a non real-time semantic segmentation algorithm in a real-time background subtraction algorithm, a variant named Asynchronous Semantic Background is also available on request

KEY COMPETITIVE ADVANTAGES

- Reduce false positive detections produced by illumination changes, dynamic backgrounds, strong shadows, and ghosts thanks to the fact that the framework combines the information of a semantic segmentation algorithm, expressed by a probability for each pixel, with the output of any background subtraction algorithm
- The inclusion of semantics always to address all the challenges of background subtraction simultaneously in a single framework
- Improve the detection of camouflaged foreground objects by maintaining a fully semantic background model
- Experiments led on the CDNet dataset show that the framework managed to improve, significantly, almost all background subtraction algorithms of the CDNet leaderboard, and reduce the mean overall error rate of all the 34 algorithms (resp. of the best 5 algorithms) by roughly 50% (resp. 20%)

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