ViBe

Input Video   ViBe Segmentation

ViBe was developed by O. Barnich and Prof. M. Van Droogenbroeck from Montefiore Institute, Department of Electrical Engineering and Computer Science of the University of Liège.

ViBe can be used in a wide range of applications such as:

- **Video surveillance** (digital imaging surveillance products): Movement detection is of paramount importance in video surveillance systems but particularly delicate for outdoor video sequences in which this new system excels. Moreover, in the event of a surveillance system with a large number of video cameras (e.g. in shopping mall or airports), the reduce computational load is a decisive factor.
- **Video Processing:** All computers can use the algorithm to detect motion and use it as a first step before applying other video/special effects.
- **Digital Cameras manufacturers** (for professional and/or amateur markets): A camera can use the algorithm to detect motion and adjust its focus very quickly.
- **Video games**: Interactive games with motion tracking
- **Automative Imaging applications**: Collision anticipation, traffic monitoring, etc.
- **Machine Vision systems**: Industrial applications, non destructive testing, etc.
- **(3D) Medical Imaging / Medical visualization systems**: This algorithm can be embedded in MRI, Computed Tomography and ultrasonic devices.
- **Satellite Imaging:** On the basis of few images of a location, it is possible to (re)build a new map / picture of the location by deleting any useless moving object from these images.

KEY ACHIEVEMENTS

- ViBe is a powerful pixel-based technique that detects the background in video sequences
- ViBe is at the basis of the state-of-the-art unsupervised background subtraction methods.
- The computational load is lower that simple background techniques implemented in commercial products
- Perfect for both SW and HW implementations

KEY COMPETITIVE ADVANTAGES

- Very low computational load. Operations are limited to substractions and operations on memory blocks. A downscaled version only needs one comparison per pixel and one byte of memory per pixel
- Concise algorithm (a software implementation requires less than 100 lines in C code
- Can be used in a wide range of applications
- Pixel-based technique, ideal for any pre-processing step. ViBe allows you to model the objects in the videos as you like
- Instantaneous initialization of the background model. ViBe is ready to operate from the second frame of any video sequence
- Robust to noise
- Patented mechanism for background model initialization
- Extended memory of past background pixels enabled by a patented mechanism of random selection
- Includes a patented mechanism for spatial consistency
- Implementations available for CPUs and GPUs

PARTNERSHIP SOUGHT

- Research cooperation agreement
- Licensing agreement

INTELLECTUAL PROPERTY

Vibe is protected by several patents (patent track: WO2009007198/ Publication date: 2009-01-15; Priority number(s): EP20070112011 20070708 / Europe (granted) : EP2015252 / US (granted): US8009918 B2 (pdf) / Japan (granted)/ JP 2011 4699564 B2

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