## Application of Lucas — Kanade method for computing the optical flow

© I.O. Sakovich, Yu.S. Belov

Kaluga Branch of Bauman Moscow State Technical University, Kaluga, 248000, Russia

The article is devoted to the detection of moving objects on the video sequence. We provide for the definition of the term "optical flow" and give a detailed analysis of Lucas– Kanade method as the most effective one for computing the optical flow. We give an overview of the improved options of this method. The article describes the main applications of the optical flow.

*Keywords:* optical flow, moving object detection, Lucas–Kanade method, computer vision.

## REFERENCES

- Elgammal A., Harwood D., Davis L. Non-parametric model for background subtraction. 6th European Conference on Computer Vision. Part II. Dublin, 2000, vol. II, pp. 751–767.
- [2] Li L., Huang W., Gu I. Y. H., Tian Q. Foreground object detection in changing background based on color co-occurrence statistics. *Applications of Computer Vision*, 2002, pp. 269-274. doi: 10.1109/ACV.2002.1182193.
- [3] Matsushita Y., Nishino K. Illumination normalization with time-dependent intrinsic images for video surveillance. *IEEE Trans. Pattern Anal. Mach. Intell.* 2004, pp. 1336–1348.
- [4] Collins R.T., Lipton A. J., Fujiyoshi H., Kanade T. Algorithms for Cooperative Multi Sensor Surveillance. *Proc. of IEEE*, vol. 89, no.10, 2001, pp. 1456–1477. doi: 10.1109/5.959341.
- [5] Opticheskiy potok [Optical flow]. *Wikipedia*. Available at: http://ru.wikipedia.org/wiki/Opticheskii\_potok/ (accessed 26 May 2014).
- [6] Opticheskii potok [Optical flow]. *Multifunctional site*. Available at: http://habrahabr.ru/post/201406 (accessed 26 May 2014).
- [7] Vychislenie opticheskogo potoka metodom Lukasa–Kanade [Calculation of optical flow by Lucas-Kanade method]. *Multifunctional site*. Available at: http://habrahabr.ru/post/169055 (accessed 26 May 2014).

**Sakovich I.O.** (b. 1992) is a student of the Department of Computer Software, Information Technologies, Applied Mathematics at Kaluga branch of Bauman Moscow State Technical University. Research interests include information technologies, image recognition, intellectual data analysis, multimedia systems. e-mail: Ilona.sakovich@rambler.ru

**Belov Yu.S.** (b. 1982) graduated from Kaluga branch of Bauman Moscow State Technical University in 2006. Ph.D., Assoc. Professor of the Department of Computer Software, Information Technologies, Applied Mathematics at Kaluga branch of Bauman Moscow State Technical University. Research interests include information technologies, computer simulation, intellectual data analysis. e-mail: ybs82@mail.ru