Determining the local vertical line direction for CubeSat class nano-satellite by the Earth images analysis

© I.A. Lomaka, E.V. Ustyugov

Samara State University, 443086, Russia

The study deals with applying video images to determine the local vertical line of a nano-satellite. In the research we develop algorithms for solving the task and present the basic formula, the result of numerical experiment. Finally, we make the conclusions concerning the systems application.

Keywords: nano-satellite, the local vertical, videonavigation, motion model, orientation.

REFERENCES

[1] Volkov V.G., Kovalev A.V., Fedchishin V.G. *Spetsialnaya tekhnika — Special machinery,* 2001, no. 6, pp. 16–21.

[2] Volkov V.G., Kovalev A.V., Fedchishin V.G. *Spetsialnaya tekhnika — Special machinery*, 2002, no. 1, pp. 18–24, 26.

[3] *Canny edge detector.* Available at: https://en.wikipedia.org/wiki/Canny_edge_detector (accessed January 20, 2016).

Lomaka I.A. (b. 1993), Master degree student of the Department of Space Research, Samara State University. e-mail: igorlomaka63@gmail.com

Ustyugov E.V. (b. 1989), post-graduate student, assistant of the Department of Space Research, Samara University. Author of over 10 scientific papers in the field of video-navigation and nano-satellite design. e-mail: efim163@gmail.com