
MOTION TRACKING AND ESTIMATION OF OBJECT SPEED IN VIDEO STREAM

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Keywords

The article is devoted to the development of object speed evaluation method from a moving camera video stream. The paper considers methods and algorithms for specified task solution, as well as methods for video stream stabilizing and tracking of moving objects in video stream. The article provides an overview of similar tracking systems and develops an object speed evaluation method from video stream. The software implementation for all selected and developed methods is produced. The software allowing to track a two-dimensional plane speed is developed.

Recognition, error, interface, testing, Levenshtein method, stabilization, object motion tracking, object movement

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References

- [1] Krasil'shchikov M.N., Sebryakova G.G., ed. *Sovremennyye informatsionnyye tekhnologii v zadachakh navigatsii i navedeniya bespilotnykh manevrennykh letatel'nykh apparatov* [Modern information technologies in navigation and guidance problems of unmanned manoeuvring aircraft]. Moscow, Fizmatlit publ., 2009, 556 p.
 - [2] Sakovich I.O., Belov Yu.S. Application of Lucas—Kanade method for computing the optical flow. *Inzhenernyy zhurnal: nauka i innovatsii* [Engineering Journal: Science and Innovation], 2014, no. 7. Available at: <http://engjournal.ru/catalog/pribor/optica/1275.html> DOI: 10.18698/2308-6033-2014-7-1275.
 - [3] Shildt G. *С++ dlya nachinayushchikh. Shag za shagom* [C++ for beginners. Step by step]. Moscow, Vil'yams publ., 2011, 639 p.
 - [4] Obukhova N.A. Detection and tracking moving object based on block matching algorithm. *Informatsionno upravlyayushchie sistemy* [Information and Control Systems], 2004, no. 1, pp. 30–37.
 - [5] Tsifrovaya stabilizatsiya izobrazheniya so statsionarnykh kamer — korrelyatsionnyy podkhod [Image digital stabilization from stationary cameras — correlation approach]. Available at: <https://habrahabr.ru/post/219815/> (accessed 23 October 2017).
 - [6] Bradski G., Kaehler A. *Learning OpenCV*. O'Reilly Media, 2008, pp. 513–516.
 - [7] Kustikova V.D. Otslezhivanie dvizheniya i algoritmy soprovozhdeniya klyuchevykh toчек [Motion tracking and key points tracking algorithm]. Nijniy Novgorod, UNN publ., 2013, 35 p.
 - [8] Murakhovskiy V., Simonovich S. *Bol'shaya kniga tsifrovoy fotografii* [Big book of digital photography]. Sankt-Petersburg, Piter publ., 2006, pp. 11–15.
 - [9] Vizil'ter Yu.V., Zheltov S.Yu., Knyaz' V.A., Khodarev A.N., Morzhin A.V. Obrabotka i analiz tsifrovyykh izobrazheniy s primerami na LabVIEW i IMAQ Vision. [Digital image pro-
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cessing and analysis with LabVIEW IMAQ and Vision examples]. Moscow, DMK Press publ., 2008, 464 p.

[10] Koplovich E.A. Razrabotka algoritmov stabilizatsii i kompressii izobrazheniy dlya sistem videonablyudeniya mobil'nykh robototekhnicheskikh kompleksov. Dis. kand. tekhn. nauk [Developing image stabilization and compression algorithms for video observation of mobile robotic systems. Kand. tech. sci. diss.]. Moscow, MIET publ., 2008. 146 p.

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