عنوان مقاله:

Correlation properties of sea surface images on video stream frames

محل انتشار:

مجله آنالیز غیر خطی و کاربردها, دوره 14, شماره 12 (سال: 1402)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Daria A. Chernomorets - *Belgorod State University ۸۵, Pobedy St., Belgorod, ۳۰۸۰۱۵, Russia*

Victor Golikov - *Universidad Autónoma del Carmen, Calle ۵۶ No. ۴ Esq Avenida Concordia Col, Benito Juàrez, Del Carmen, Campeche, ۲۴۱۸۰, Mexico*

Tatyana N. Balabanova - *Belgorod State University ۸۵, Pobedy St., Belgorod, ۳۰۸۰۱۵, Russia*

Ekaterina I. Prokhorenko - *Belgorod State University ۸۵, Pobedy St., Belgorod, ۳۰۸۰۱۵, Russia*

Evgeniya V. Bolgova - *Belgorod State University ۸۵, Pobedy St., Belgorod, ۳۰۸۰۱۵, Russia*

Andrey A. Chernomorets - *Belgorod State University ۸۵, Pobedy St., Belgorod, ۳۰۸۰۱۵, Russia*

خلاصه مقاله:

The work is devoted to the characteristic properties analysis of the sea surface image on video stream frames, which makes it possible to make a decision about the detection of object images on them in the absence of a priori information about objects, which is important in the development of navigation systems, security and surveillance systems. In this paper, it is proposes to analyze the values of the normalized cross-correlation coefficients of a given image fragment with higher dimension fragments on sequential video stream frames to identify the distinctive properties of the agitated sea surface and floating objects images. The computational experiments were carried out and have shown that the analysis of the results of calculating the frame fragments cross-correlations allows us to estimate the amount of displacement and distortion of a given image fragment. The results of computational experiments demonstrate the presence of differences in the values of the corresponding cross-correlation coefficients for the sea surface images with different agitation degrees, containing and not containing an image of the object. Based on the analysis of the proposed correlation properties of the sea surface images, a decisive rule for selecting fragments of frames containing an image of an object is formulated, the use of which, in many cases, allows to .detection of fragments of object images correctly

کلمات کلیدی:

image, agitated sea surface, video stream frames, normalized cross-correlation, image fragment distortion, image fragment offset, object detection