سیویلیکا - ناشر تخصصی مقالات کنفرانس ها و ژورنال ها
گواهی ثبت مقاله در سیویلیکا
CIVILICA.com

عنوان مقاله:

Visual Tracking using Learning Histogram of Oriented Gradients by SVM on Mobile Robot

محل انتشار:

دوفصلنامه مجله کامپیوتر و رباتیک, دوره 11, شماره 2 (سال: 1397)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Iman Zabbah - *Department of computer, Torbat-e-Heydariyeh branch, Islamic Azad University, Torbat-e-Heydariyeh, Iran*

Shima Foolad - *Department of Computer, Semnan University, Semnan, Iran*

Ali Maroosi - *Department of Computer, Torbat Heydariyeh University, Torbat Heydariyeh, Iran*

Alireza Pourreza - *Department of Computer, Semnan University, Semnan, Iran*

خلاصه مقاله:

The intelligence of a mobile robot is highly dependent on its vision. The main objective of an intelligent mobile robot is in its ability to the online image processing, object detection, and especially visual tracking which is a complex task in stochastic environments. Tracking algorithms suffer from sequence challenges such as illumination variation, occlusion, and background clutter, so an accurate tracker should employ the appropriate visual features to identify target. In this paper, we propose using the histogram of oriented gradient (HOG), as an important descriptor. The descriptor simulates the performance of the complex cells in the primary visual cortex (V1) and it has low sensitivity to the illumination changes. In the proposed method, firstly, an object model is generated by training the HOG of multi first frames via an SVM classifier. Then, in order to track a new frame, the HOG descriptors are extracted from the surrounding areas of the target in the previous frame and convolved with the object model. Finally, the location with the highest score is defined as the target. The experimental results demonstrate the proposed method has significant performance compare to the state-of-the-art methods. Furthermore, we apply our algorithm to the mobile robot built by .the robotics team to ensure its performance in a real environment

کلمات کلیدی:

Histogram of oriented gradient, support vector machine, object model, mobile robot, target tracking, visual tracking

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/905488