INTISARI

IDENTIFIKASI OBJEK BINATANG HARIMAU MENGGUNAKAN METODE MIXTURE OF GAUSSIAN (MOG) DAN LOCAL BINARY PATTERN HISTOGRAM (LBPH)

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Upaya konservasi untuk mencegah kepunahan binatang langka seperti harimau sangat diperlukan. Kamera perangkap dapat digunakan sebagai alat dalam membantu upaya konservasi. Namun sejauh ini kamera perangkap hanya mampu menangkap objek tanpa mengetahui jenis objek binatang apa yang tertangkap.

Pada penelitian ini dibuat suatu sistem kamera perangkap yang dapat mengidentifikasi objek binatang harimau. Kamera perangkap dirancang dengan *raspberry pi 3B* yang dilengkapi bahasa pemrograman *python* dan pustaka *OpenCV*. Metode *mixture of gaussian* (MOG) digunakan untuk deteksi gerak, dan *local binary pattern histogram* (LBPH) dan algoritma *Adaboost* untuk identifikasi citra. Citra yang teridentifikasi diunggah ke akun *dropbox* API sesuai kelasnya, yaitu harimau dan bukan harimau.

Pengujian identifikasi citra harimau beresolusi 320x240 piksel menghasilkan akurasi sebesar 78,00 % pada 200 *weak classifier*. Jarak maksimal sistem dapat mengidentifikasi objek binatang harimau yaitu 6,00 meter. Proses akuisi citra dapat dilakukan secara optimal dengan nilai *gaussian blur* k = 13 dan nilai *threshold* sebesar 100 piksel. Waktu rata-rata sistem merespon adanya pergerakan objek per *frame* sebesar 0,066 detik, waktu identifikasi citra rata-rata sebesar 14,820 detik dan waktu unggah citra rata-rata sebesar 1,730 detik.

Kata kunci: kamera perangkap, harimau, MOG, LBPH , OpenCV.

ABSTRACT

IDENTIFICATION OF TIGER ANIMAL OBJECTS USING MOG (MIXTURE OF GAUSSIAN) AND LBPH (LOCAL BINARY PATTERN HISTOGRAM) METHODS

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Conservation efforts to prevent the extinction of rare animals such as tigers are needed. Camera trap can be used as a tool in assisting conservation efforts. However so far, the camera trap has only been able to capture objects without knowing what kinds of animal object was caught.

In this research, a camera trap system is made that can identify tiger animal objects. The camera trap was designed with a single board computer Raspberry pi 3B equipped with python programming language and OpenCV library. The mixture of gaussian (MOG) method is used for motion detection, and local binary pattern histogram (LBPH) with *Adaboost* algorithm is used for image identification. The identified image will be uploaded to the *Dropbox* API account according to its class, which is a tiger and not a tiger.

The result of testing of tiger images with a resolution of 320 x 240 pixel produces an accuracy of 78.00 % at the 200 weak classifiers. The maximum distance for the system to identify the tiger object is 6.00 m. The acquisition proses can be optimum with the gaussian blur's value of k is 13 and the threshold value is 100 pixels. The average time of the system responds to movement of objects per frame is 0.066 seconds, the average image identification time is 14.820 seconds and the average time for uploading image to *dropbox* is 1.730 seconds.

Keywords: camera trap, motion detection, tiger, MOG, LBPH, OpenCV.