Project Title: Feather Analysis for the Barn Owl

Students: Naftali Kizner

Supervisor: Yuval Bahat

Semester Registered: 2012 (Winter)

Submission Date: September 2013

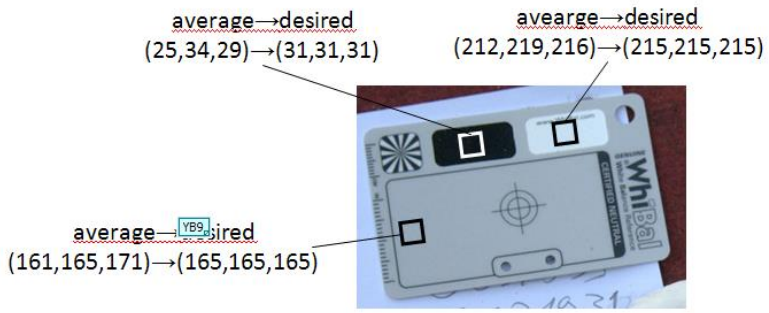
SIPL Archive number:

Abstract

The barn owl is a very common night fowl. A research conducted at the department of zoology of TAU examines the black spots on its belly. In this project, a system was built for the research. The system gets pictures of barn owls and examines the spots in a semi-automated procedure: it calibrates the image's colors and scale by itself, and afterwards it processes the spots according to areas marked by the user.

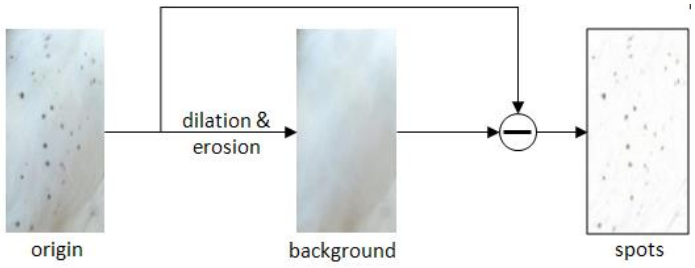
About Image Correlation

Image correlation is executed using a white-balance (WB) card included in the barn owl's picture. As pictures are taken under different conditions of lighting and different cameras, the WB card is used as a reference for standardization. The system matches the colors of the photographed WB card to the wanted colors.



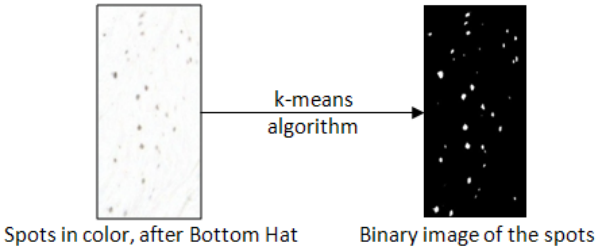
About Bottom Hat operation

Bottom Hat is a morphological operation, in which dilation and erosion operations are applied, and then the original image is subtracted from the result. In this project it is used to isolate spots from plumage.



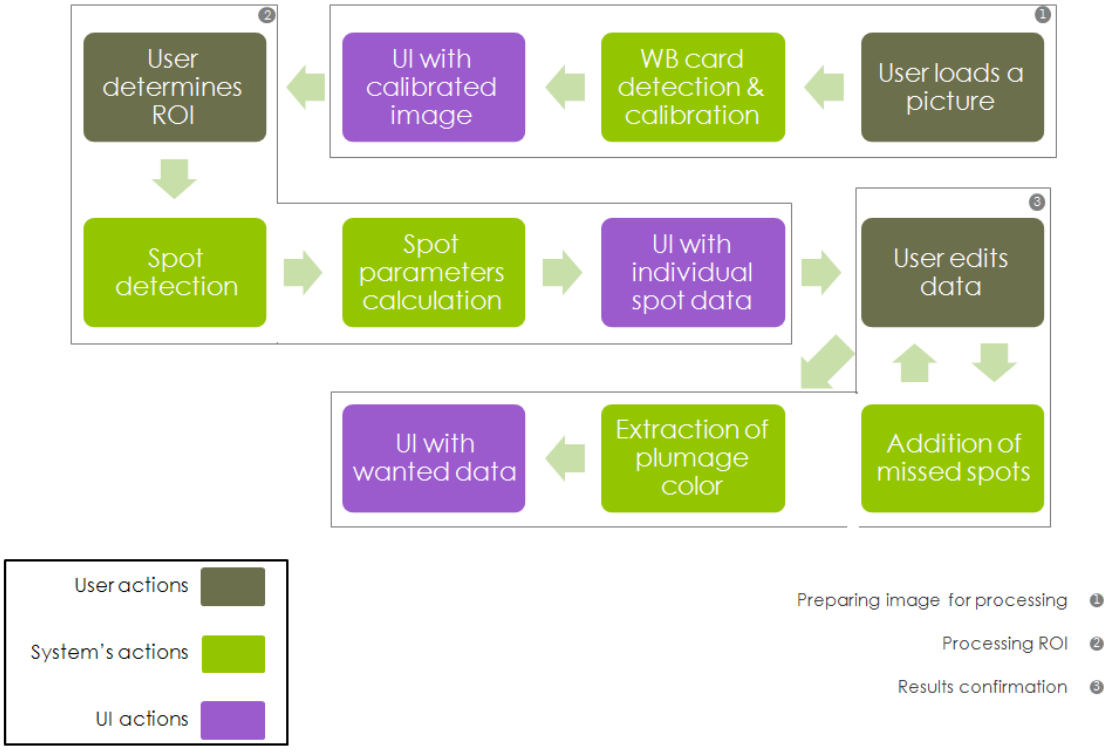
About K-Means algorithm

The K-Means algorithm separates populations of data into groups. In this project it is used after a Bottom Hat operation to determine dualistically which pixels belong to spots and which belong to plumage.



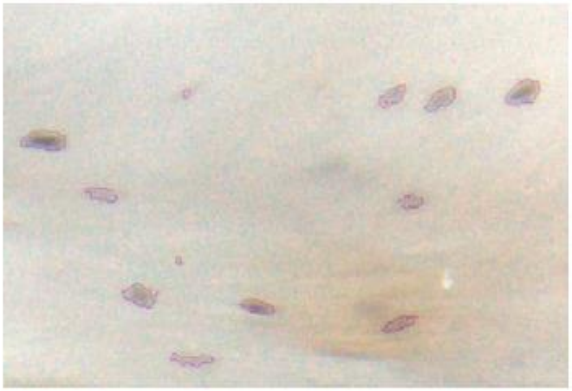
The Algorithm

The Algorithm's Flow Chart



Result Example

Recognized spots are encircled in purple.



References

[1] Gonzalez & woods, “Digital Image Processing”, 2002.

[2] T. Burghardt, B. Thomas, P.J. Barham, J. ali, “Automated Visual Recognition of Individual African Penguins”, University of Bristol, Department of Computer Science, September 2004.

[3] Michael Elad, "Image processing", 2000.

Additional Links:

Related Documents:

[1] Report (PDF)

[2] Power Point Presentation (PDF)

[3] Project Poster (PDF)