Deep learning tools for ecological image analysis: an example using TensorFlow and Optical Character Recognition.

To monitor biodiversity, ecologists and conservation managers need high quality temporal and spatial data on animal presence, movement, and behavior. The high costs, complex logistics, and significant expertise of human observation studies limit the ability to gather sufficient data collection for analysis. Increasingly, ecologists are turning towards greater automation to facilitate biodiversity monitoring. The combination of decreased costs of image capture and growing image analysis tools makes automated biodiversity monitoring closer than ever before.

A major obstacle to the growth of image-based ecological analysis is the efficiency of scoring and extracting information from images. Annotating images with metadata, such as time, date and location, as well species identity requires significant time investment.

The emerging field of computer vision can decrease the time for image annotation, increase consistency among annotators, and engage less experienced observers in biodiversity monitoring. Computer vision is a field of image-based computer science that uses image pixels to mimic human perception based on image characteristics, shape and sequence.

While computer vision has made incredible strides in a variety of fields, its growth in ecology has been slowed by a lack of access to high level algorithms. Computer vision articles

Compared to tesseract OCR  
Compare to google cloud vision api.

Notes:

Tensorflow intro: <https://www.tensorflow.org/versions/r0.11/tutorials/mnist/beginners/>

https://www.ruk.si/notes/machine\_learning/gcml

Step 1. Train locally.

Step 2. Inspect logs on tensorboard - > to see the logs, docker needs to the port forwarding to be set correctly. Perhaps

docker run -it -p 8080:8080 bw4sz/cloudml

Step 3. Try on one worker

Submit job. Wait in Queue.