Deep learning identification of parasite eggs in sh*tloads of data

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Image recognition using machine learning is gaining grounds in more and more fields. One field that has yet to utilize this new technology is diagnostics of parasites in animals. Even for parasites infecting humans, such as malaria, image recognition techniques are not properly utilized. Diagnostics of parasites is a growing field that combats the spread of resistance to anti-parasite medicine (anthelmintics). This resistance threatens meat and dairy production as well as the health of pets such as horses, cats and dogs.

Today’s diagnostics is based on experts investigating eggs in fecal samples by microscopy. The training of experts can take up to 6 months for certain species which makes it a cumbersome process. Therefore, automation of the process is much sought after.

This project aims to build a classifier that can count and classify the number of eggs in a picture. An example dataset containing labelled data from real samples will be provided. Since the state of the art within this field is quite limited, applying deep neural network designs intended for image classification and object recognition can probably render highly relevant results. If initial results are promising, a continuation (within the project or as a master thesis) would be to transition from individual images.

The suggested framework for implementing this will be TensorFlow in Python. Access to a shared GPU cluster with hundreds of GPUs will be available for efficient training and evaluation of various network designs.

Microscope image showing an egg and various artifacts.