

# Summer Internship/Master's project

## Animal Identification

### Synopsis

This project will help to study Chronic Wasting Disease (CWD), a neurologic disease similar to BSE (Mad Cow disease), both of which occur due to a prion affecting the nervous system. CWD is commonly found in deer, elk, reindeer, and moose in certain areas of North America, Norway, and Finland since 1967. Prevalence is increasing significantly, and deer and moose in 24 states of the U.S. (especially in the Midwest and Rockies) are now infected.

Cameras have been set up at feeding sites to investigate how livestock and wildlife mingle and how the prions move, or don't move, from species to species. These cameras record a lot of images – this project will use AI to identify whether an animal appears in the image, and if so, what species the animal is (especially livestock vs. wildlife). This allows researchers to quickly scan through a large set of images and focus on the research questions rather than identifying animals manually.

You will

- survey the literature to identify suitable existing approaches to perform this task;
- train an image recognition system based on a set of labeled example images provided;
- deploy this system and evaluate its performance on real images from the cameras deployed in the field.

### What you should bring to the project

You should be self-motivated and able to work independently, have strong programming and analytical skills, basic machine learning knowledge, and ideally some experience with deep neural networks and image recognition. Experience with a Linux environment and using large-scale computational resources such as Teton is not required, but a plus.

### What you will get out of it

You will become familiar with state-of-the-art methods in deep learning and image recognition and hone your data science skills on a real-world project. Such experience is highly sought-after in industry. Depending on the obtained results, this project may lead to a scientific publication. This is a project with lots of details to be defined as part of it – you can bring in your own ideas and make it your own.

Interested? Talk to Lars Kotthoff <larsko@uwyo.edu>. Supported by a grant from Microsoft; joint project with Brant Schumaker (Veterinary Sciences).