

## ECS 193AB Winter/Spring2017

### Image Processing for Animals

The Quail Ridge Reserve (<http://nrs.ucdavis.edu/Quail.html>) is an outdoor research laboratory for ecologists, biologists and computer scientists. The reserve infrastructure features a Wi-Fi network allowing sensors and cameras to be deployed to biologically relevant locations to collect data autonomously. Web and non-networked trail cameras are used to record the presence of various wildlife species including deer and mountain lions, as well as study species such as mice, woodrats and salamanders. The trail camera imagery needs to be sorted according to presence/absence, classification of species, and numbers of animals. The web camera images solely need to be sorted to presence/absence for a single species, but are continuously captured resulting in a large amount of images that need to be filtered. All the images need to be intelligently cataloged and archived. The goal is to produce a scalable platform that can be duplicated for other Reserves in the Natural Reserve System (<http://www.ucnrs.org/>).

The students will identify state-of-the-art machine learning, image processing, and classification techniques. We envision a layered approach that could incorporate automated image processing and crowd sourcing to correctly ID images before cataloging.

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