



A computer vision for animal ecology

BEN G. WEINSTEIN, 7 NON 2017, BRITISH ECOLOGICAL SOCIETY

PRESENTED BY: THOMAS CARR

What and Why?

- ▶ Ecologists aim to observe species in the wild, and computer vision is a tool that can greatly aid in everything relating to image review
- ▶ The goal is to create a deep learning model that can recognize the species of an animal by a photo
- ▶ I'm tackling this problem as combining computer vision with classification is very interesting to me
- ▶ Additionally, it will be interesting to see what sort of patterns computers are able to detect in wildlife while also growing skills in computer vision

Survey of Other Works

- ▶ A review of deep learning algorithms for computer vision systems in livestock (2021)
 - ▶ Reviewed usage of Deep Learning for classification and segmentation tasks relating to animals
 - ▶ Reviews topics such as Convolutions, Deconvolutions, Pooling, Recurrent, and Dense layers
- ▶ Animal classification using facial images with score-level fusion (2018)
 - ▶ Introduced me to Kernel Fisher Analysis (KFA) for feature extraction for both classification and object recognition



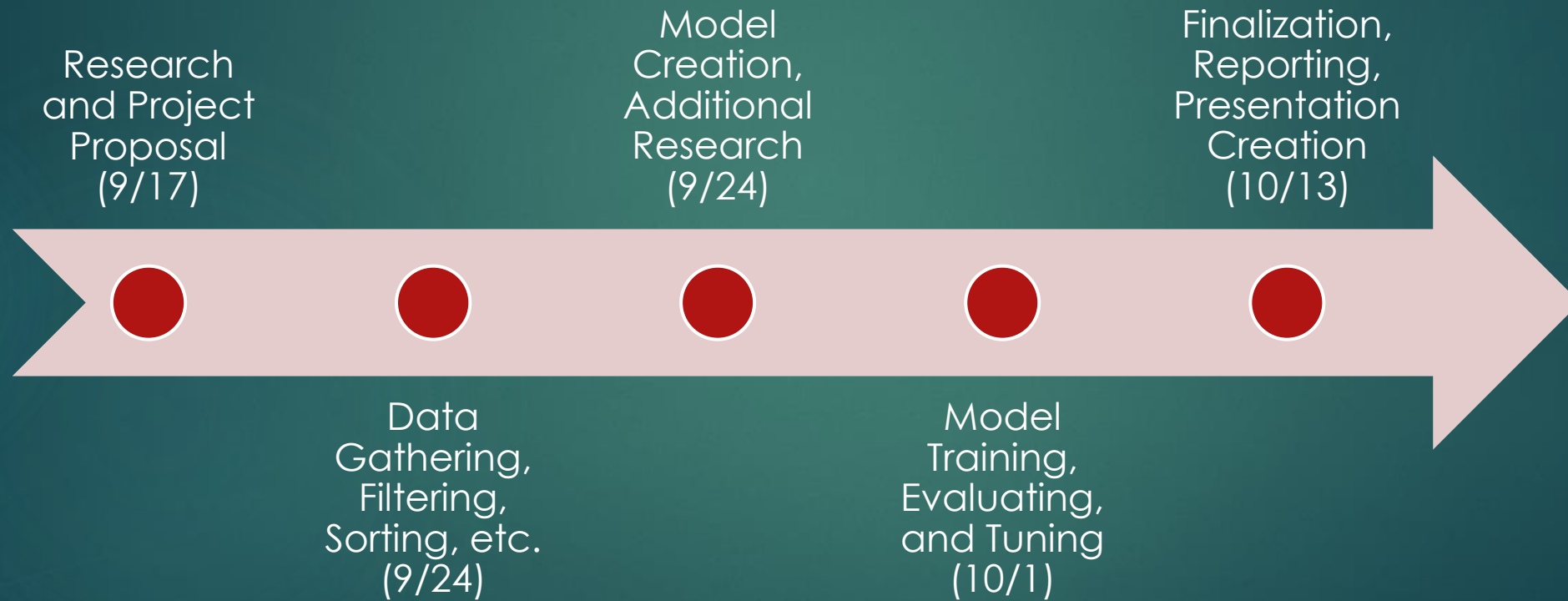
Method

- ▶ Libraries
 - ▶ Fastai
 - ▶ Pytorch
- ▶ Machine Learning Methods
 - ▶ Convolutional Neural Networks
 - ▶ Multi-Layer Perception Model
 - ▶ Multi-Class Classification

Dataset

- ▶ Public Dataset from Kaggle.com
- ▶ 90 Different Species
 - ▶ Minimum 60 images per species
- ▶ [Located Here](#)

Timeline



Citations

- ▶ Weinstein, Ben G.. "A computer vision for animal ecology". Journal of Animal Ecology 87. 3(2018): 533-545.
 - ▶ [Link](#)
- ▶ Dario Augusto Borges Oliveira, et al. "A review of deep learning algorithms for computer vision systems in livestock". Livestock Science 253. (2021): 104700.
 - ▶ [Link](#)
- ▶ Taheri, Shahram et al. "Animal classification using facial images with score-level fusion". IET Computer Vision 12. 5(2018): 679-685.
 - ▶ [Link](#)