

## Goals for Week 1/30-2/5

This week I need to

- 1) Try some image augmentation techniques (e.g., image crop) to improve our current classification models.
- 2) Compare the results of two end-to-end classification models:
  - a. Do binary classification first, then used the images that are classified as “Animal” to train the multiclass classification model (output only contains species classes)
  - b. Do multiple classification (output contains species classes and ghost class).

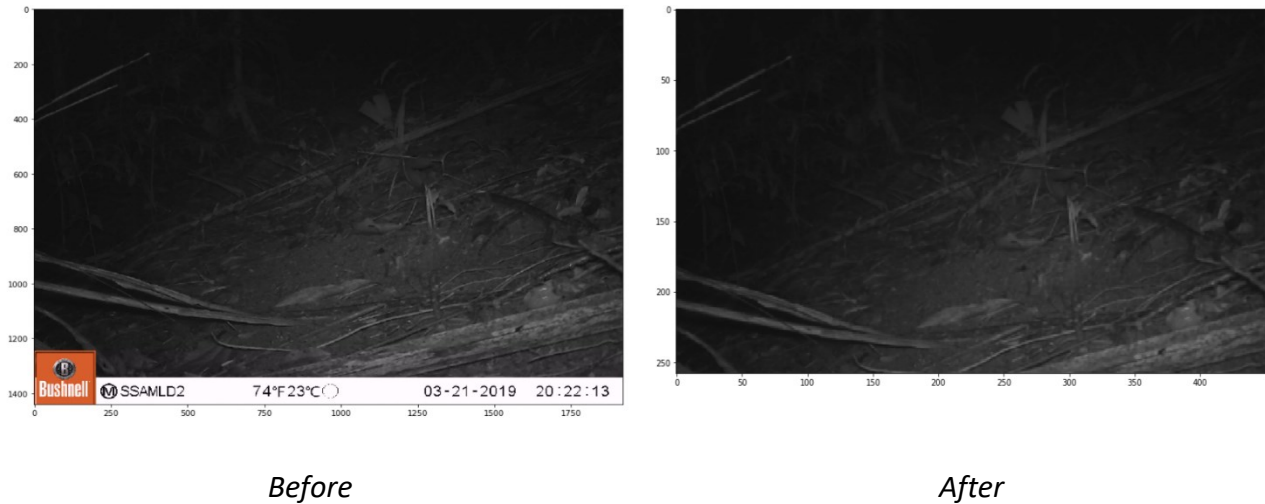
These goals are all part of completing story 2.1.1 (Theme is Image Classification and Object Detection; story is Image Classification). I will work on (1) and (2) independently.

Since the new data are not ready for training, I decided to improve our current models using old data. The reason Goal (1) is worth trying is that at the bottom of each image, there are some text information that may add noise to our model for detecting the animals. Goal (2) is very important for us to know whether we need separate end-to-end classification models (binary/multiclass) or an all-in-one model, although we need more new data to train and test the models to make the final decision.

The week is ambitious, and I expect it to take about 8-10 hours on working independently and 1 hour for internal meeting. My plan is to finish (1) by Saturday, and (2) by Sunday.

## Report for Week 1/30-2/5

For Goal (1), I created a new class CropTheBottomStrip() to automatically crop the bottom strip in the image during the image augmentation process (shown as follow):



By doing this, the val accuracy improves a little bit as expected and we believe this step will keep improving the performance as more data be added to the training sample. I checked the misclassified images and found some of them were mislabeled initially and some of them includes species with few sample data, which proves again the importance of the data labeling accuracy and the data sufficiency for training our model. The updated code files have been pushed to the GitLab (<https://gitlab.oit.duke.edu/duke-mids/workingprojectrepositories/2020-2021/camera-trap-imaging/-/tree/master/classification>).

For Goal (2), I didn't finish it because my team decided to select the final model after we finish training the model using all data from Brazil and Ecuador.