

## **Animal Classification - Group Proposal**

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### **What problem did you select and why did you select it?**

The Team would explore the topic of computer vision primarily, applying the image classification technique to animal detection. The animal classification could be used in animal management and tag the different animal species, for further application, it could be developed and suitable for animal photo recognition, early childhood education science, and image content analysis, to help people get a better idea of animals and the diversity of nature.

### **What database/dataset will you use? Is it large enough to train a deep network?**

The team is going to use the “Animal Image Classification Dataset,” a source from Kaggle, which contains 12 classes of animals and at least 1,400 image files for each class, which is enough to train the common architectures in the convolutional neural network, besides, data augmentation would be used, it will expand up the training dataset.

### **What deep network will you use? Will it be a standard form of the network, or will you have to customize it?**

The team would use the convolutional neural network which is one of the common ways applied to analyze visual imagery. The team would compare the state-of-the-art pre-trained models such as VGG19 and ResNet50 and the model with our customized architecture.

### **What framework will you use to implement the network? Why?**

The team is using TensorFlow to implement the network. TensorFlow is a powerful and mature deep learning library with strong visualization capabilities, and there are multiple options for advanced model development.

**What reference materials will you use to obtain sufficient background on applying the chosen network to the specific problem that you selected?**

The team would use the Github from the Professor, online tutorials and tensorflow.org to gain the knowledge and apply to our project.

**How will you judge the performance of the network? What metrics will you use?**

The original dataset would be split into training, validation, and testing dataset. In training, the loss and accuracy of train and validation would be detected; In testing, the predicted result would be used in judging the performance of the network. In the list of evaluation metrics, the team would use accuracy score, F1 score, and Cohen Kappa score to evaluate the model performance and how the predicted result matches the target.

**Provide a rough schedule for completing the project.**

Date	Task
March. 30th	Dataset Search
April. 2nd	Dataset Understanding
April. 5th	Data Preprocessing (train test split)
April. 10th	Define Model
April. 20th	Model Evaluation
April. 25th	Model report