# WILDLIFE IMAGE IDENTIFICATION THROUGH DEEP LEARNING

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Black-winged stilt

# EXECUTIVE SUMMARY

1. ## Camera traps are an essential tool for wildlife monitoring

   Camera traps allow for wildlife data to be collected with minimal human disturbance

2. ## Our AI can identify animals in game camera photos

   Our model can identify wildlife in photos with –% accuracy

3. ## Using AI for image detection saves time and resources

   Camera traps produce an enormous number of images, and sifting through these images to identify individual species can be time consuming and tedious

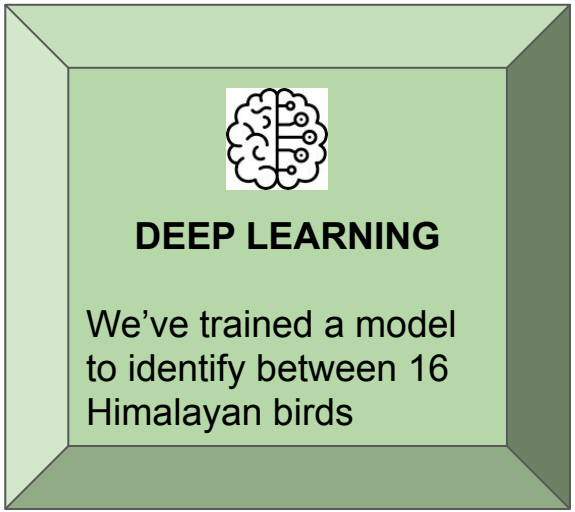
# Camera Traps for Wildlife Monitoring

Camera traps are significantly more effective than other methods at detecting a large number of species (31% more) and generating detections of species (91% more) (Wearn and Glover-Kapfer 2019).


Monitoring for population size, species interactions, and conservation

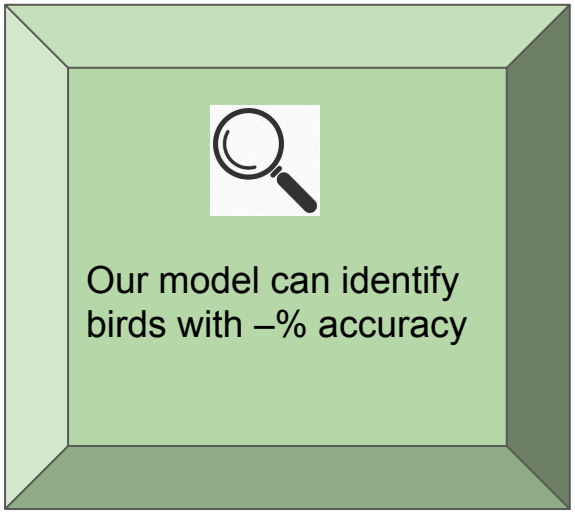
Monitoring for illegal poaching activity

# Deep Learning With Camera Trap Imagery



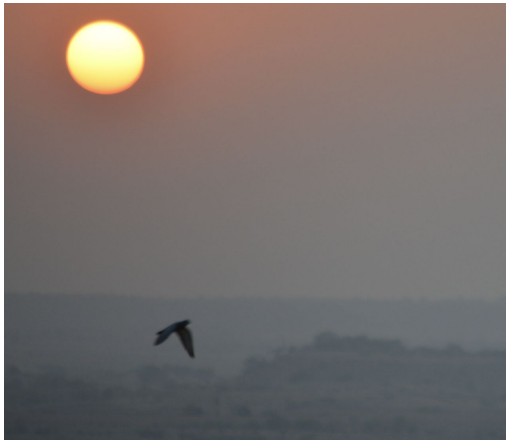
**DEEP LEARNING**

We've trained a model to identify between 16 Himalayan birds



Our model can identify birds with –% accuracy

# Input Images, Output Labels



Pigeon

Magpie

Black-legged stilt

# Model Architecture: Convolutional Neural Network

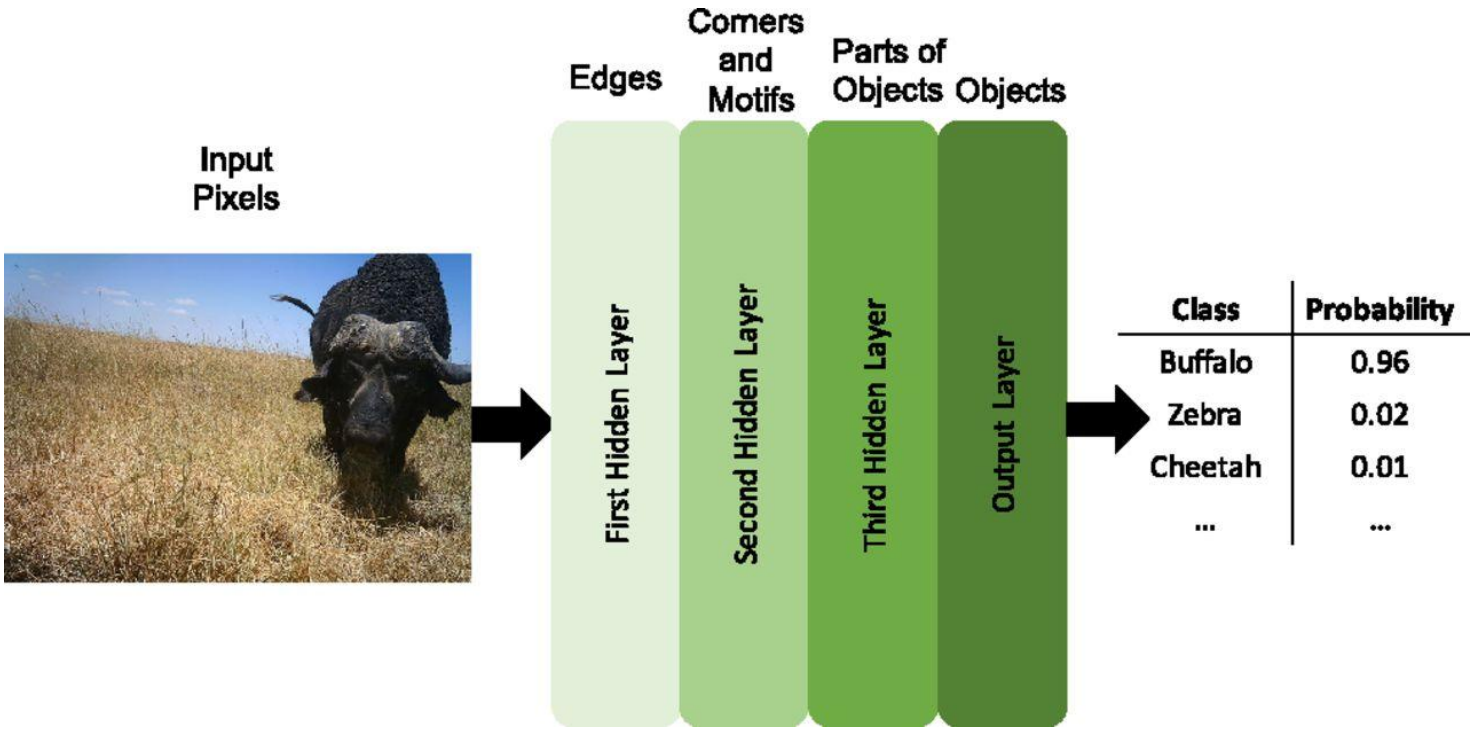
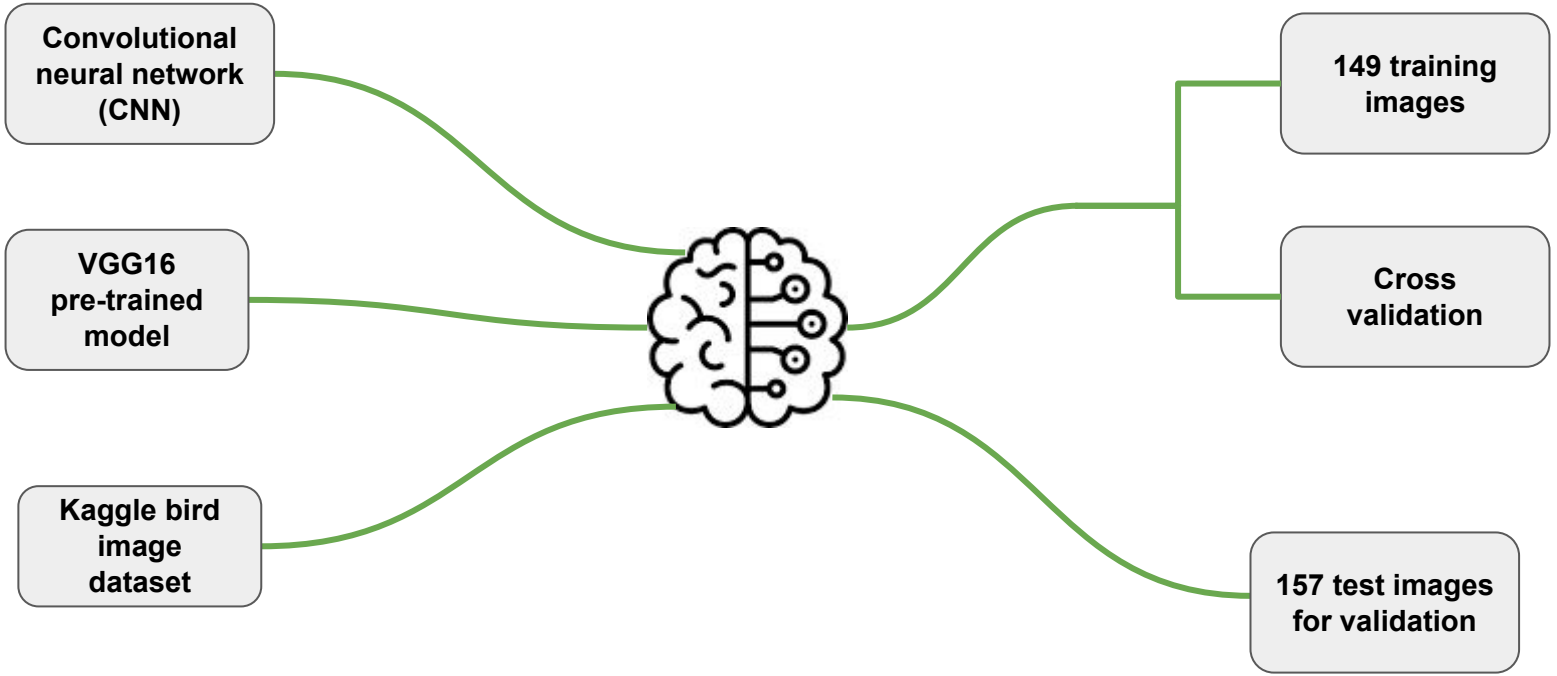



Image credit: Norouzzadeh et al. 2018

# Model Architecture, Training and Validation



# What Are The Benefits?

- Automated animal identification
- Saves time and labor
- High accuracy on large datasets
- Minimizes human error

# Model Limitations and Next Steps

| | Limitations | Next Steps |
|---|---|---|
| **Sample population**<br>*Size matters* | The model is trained and validated on a very small image dataset. | Use a much larger dataset to train and validate the model and increase model accuracy. |
| **Data input**<br>*Image only* | Model takes in image only, and does not take into account additional attributes such as animal behavior or number of animals. | Incorporating additional information would make the model more useful for population monitoring and management. |
| **Deployment** | The current model exists only on my computer. | Develop a web interface and build the user pipeline. |