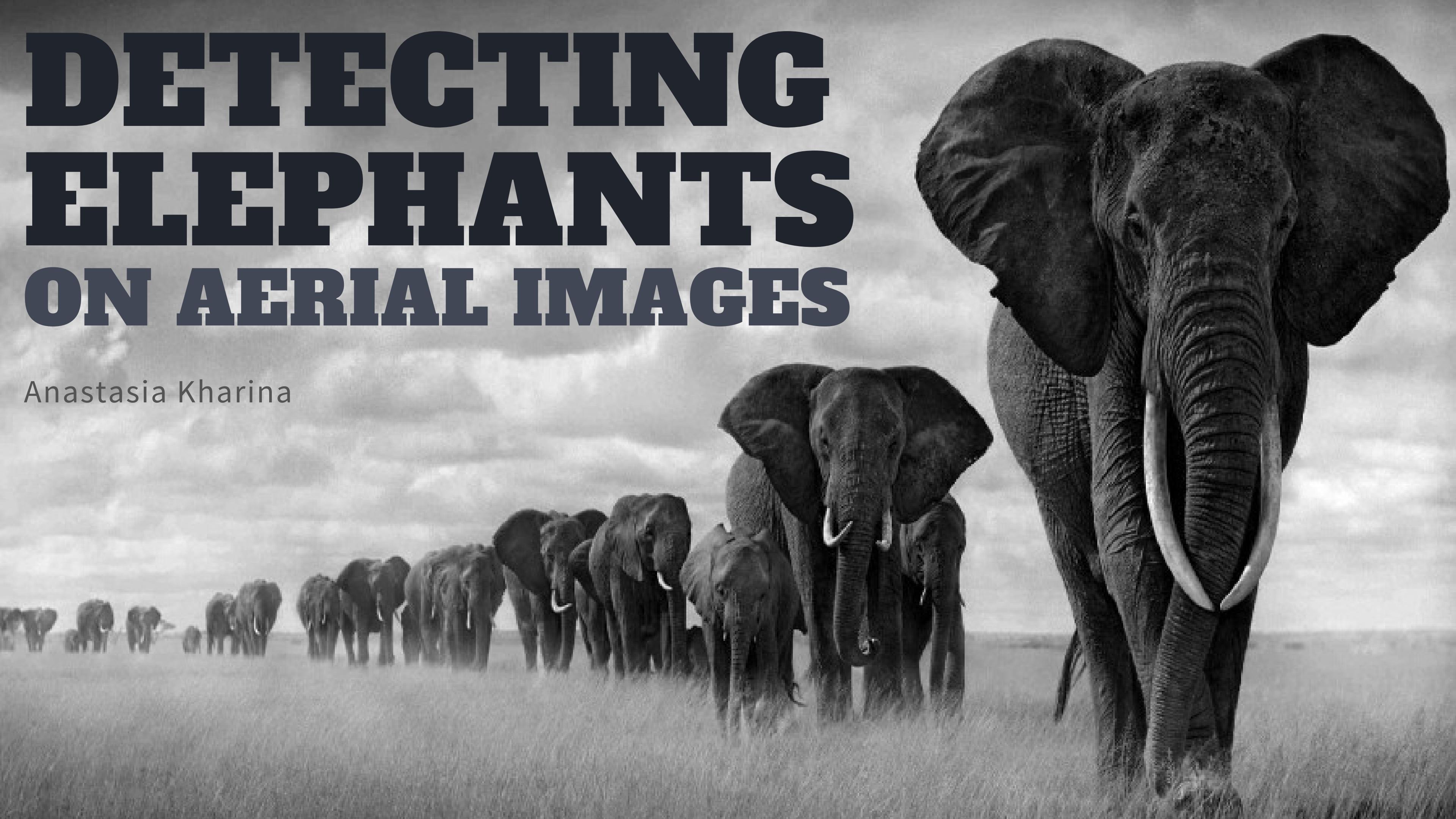


DETECTING ELEPHANTS ON AERIAL IMAGES

Anastasia Kharina

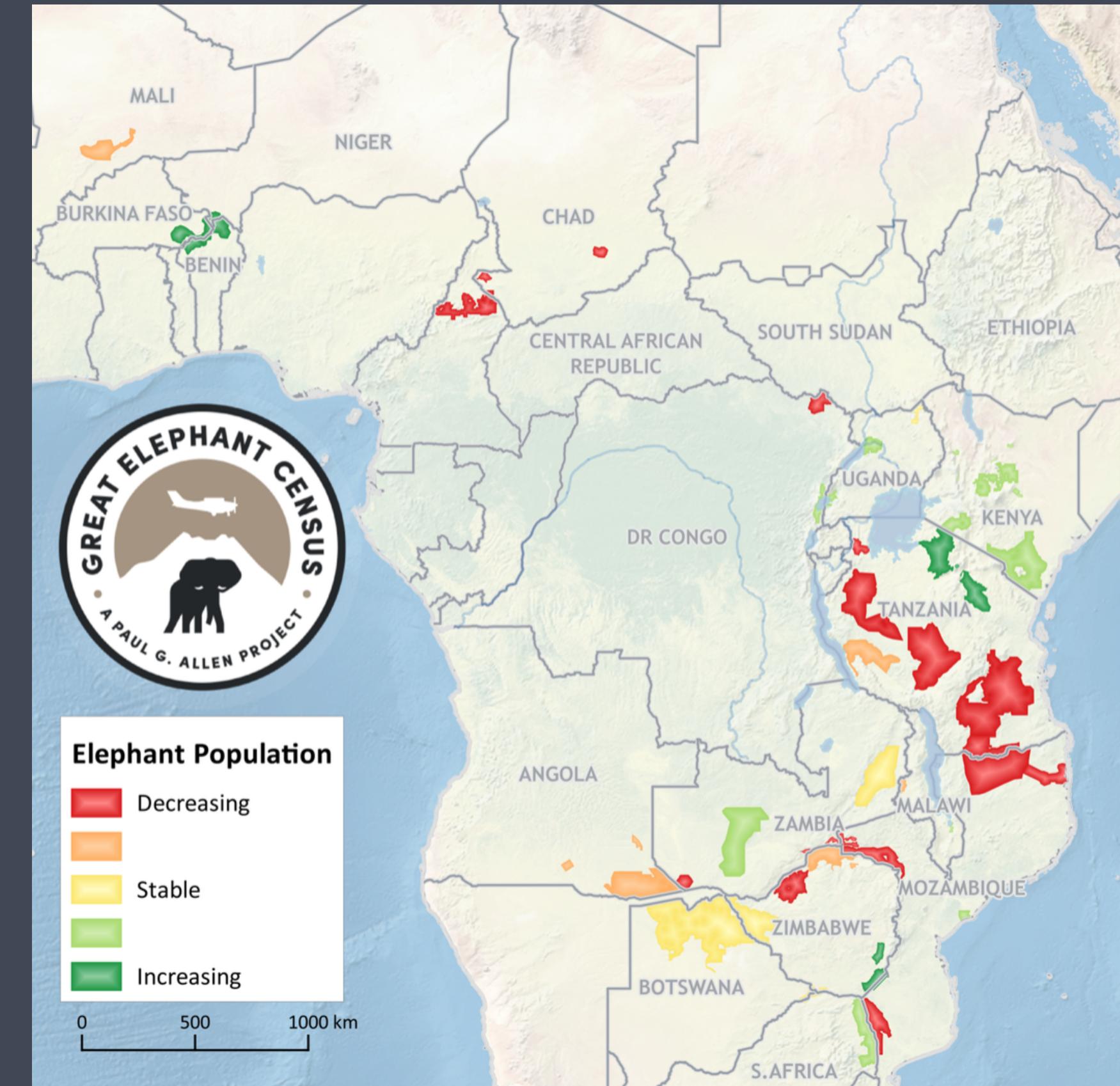


Elephant Facts:

THERE ARE ~380,000 AFRICAN SAVANNA ELEPHANTS LEFT IN 18 COUNTRIES

POPULATION DOWN 30% IN SEVEN YEARS
PRIMARILY DUE TO POACHING

<https://www.greatelephantcensus.com>



Detecting Elephants on Aerial Images



CONVENTIONAL AERIAL SURVEY

resource, labor, & time intensive!



PROPOSED CONCEPT

safer, cheaper, quicker

Detecting Elephants on Aerial Images



Detecting Elephants on Aerial Images



Detecting Elephants on Aerial Images

15,581
ELEPHANTS

FROM

2,074
IMAGES

Naudé, Johannes J., & Joubert, Deon. (2019). The Aerial Elephant Dataset [Data set]. Zenodo.
<http://doi.org/10.5281/zenodo.3234780>

The Method

ANNOTATION

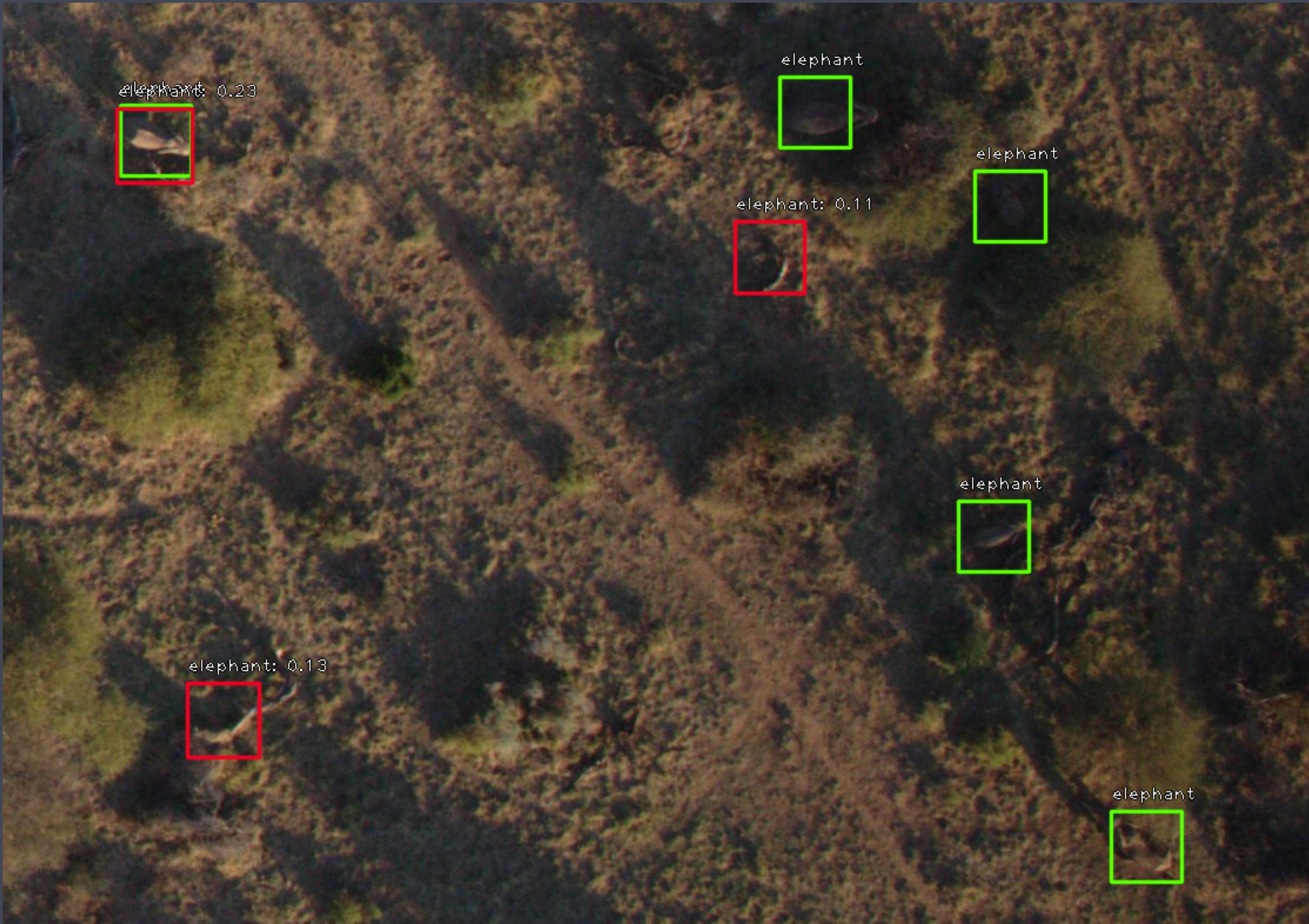
Create bounding boxes so the computer can learn what an elephant looks like

AUGMENTATION

Randomly modify image contrast, brightness, hue, saturation

DEEP LEARNING

RetinaNet

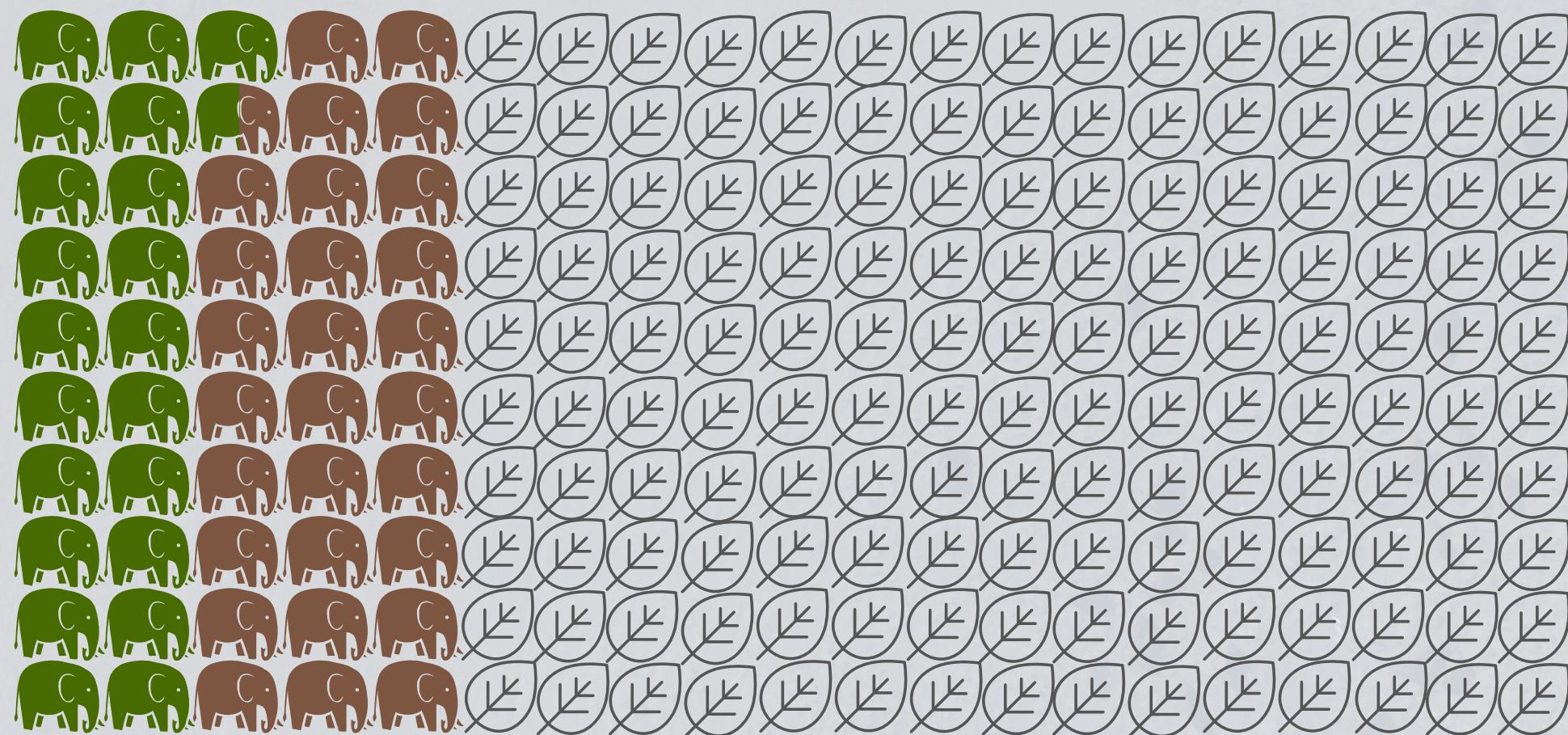


Detecting Elephants on Aerial Images





Model Performance: A Good Start!



FUTURE WORK

CLIP

Divide images into smaller ones to help with data imbalance

TRAIN
SEPARATELY

Train separate models for different landscape

CROSS-TRAIN

Train model to include objects often misdetected as elephants

BETTER DATA

Better Resolution
(Satellite Imagery?)

InfraRed / Thermal
Mapping



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<https://www.linkedin.com/in/akharina>



https://github.com/akharina/elephant_detection