SnakeCLEF 2020

Impact of pretrained networks for snake species identification

Why Snake Species Identification?

500,000 Victims of Snake Bites Globally Every Year

Goal of the Challenge

Accurately identify the snake species given an image

Variation with age

Juvenile Adult

Geographic variation

Medically-important venomous snakes

Similar-looking harmless snakes

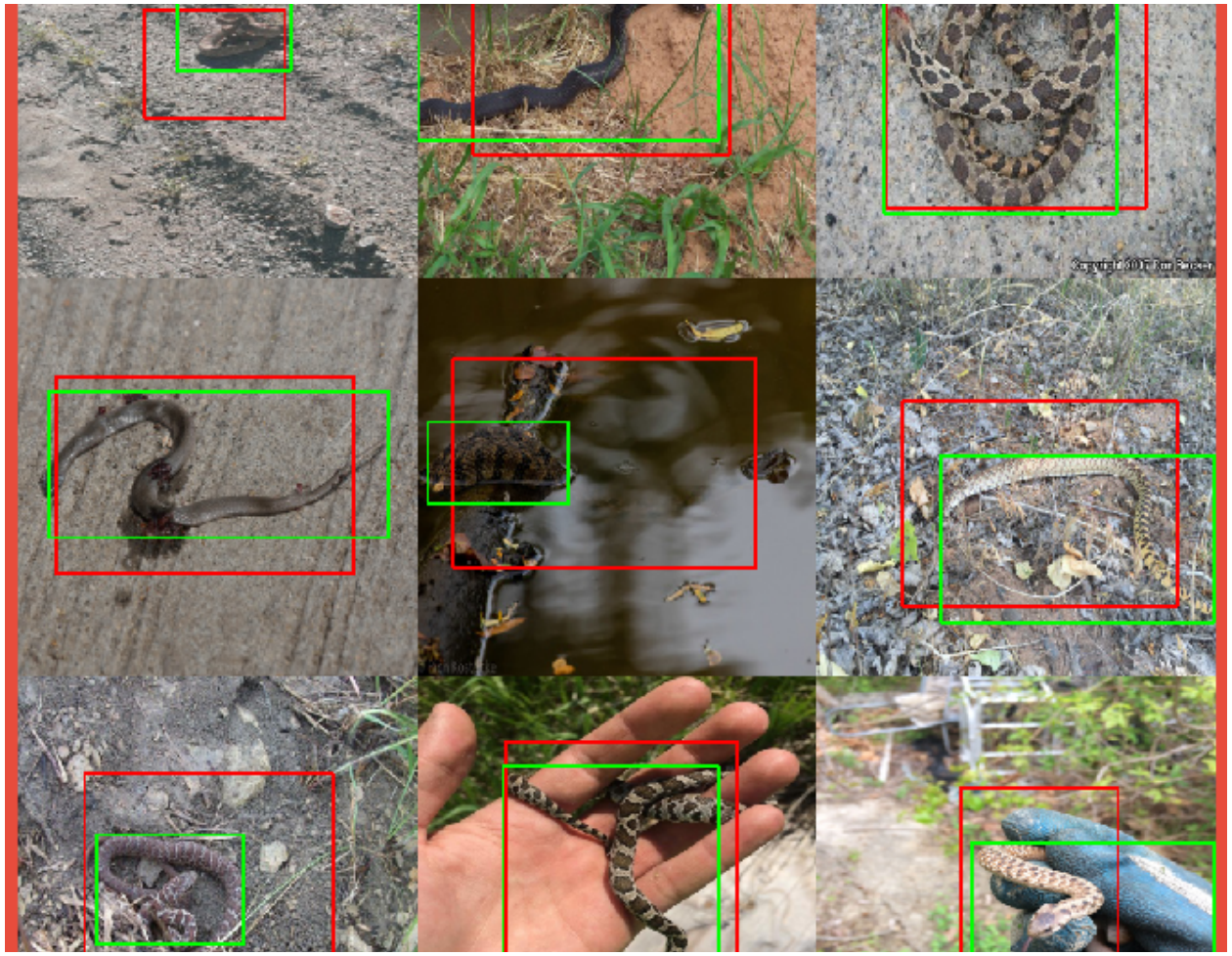
783 Species

Imbalanced- 12,201 vs 17

245,185 images

0.625 F1 Score

Previous Approaches - Round 2 (Winner) and Round 3(Runner)



EfficientNet With Object Detection

SnakeCLEF 2020 Approach

- **Study the impact of pretrained networks**
- **Work based on Big Transfer from GoogleAI**

  Insight: Bigger models necessarily does not mean better accuracy. Number of images in the dataset plays a crucial role
- **Pretrained checkpoints from both ImageNet-1k (1.4m) and ImageNet-21k (14.2m , 21,841 classes)**

SnakeCLEF2020 Approach Cntd...

- **Same hyperparameters for both testing - Vanilla Resnet50-v2**

  10,000 Steps

  Batch size - 512 using Batch accumulation

  Stochastic gradient descent with momentum 0.9

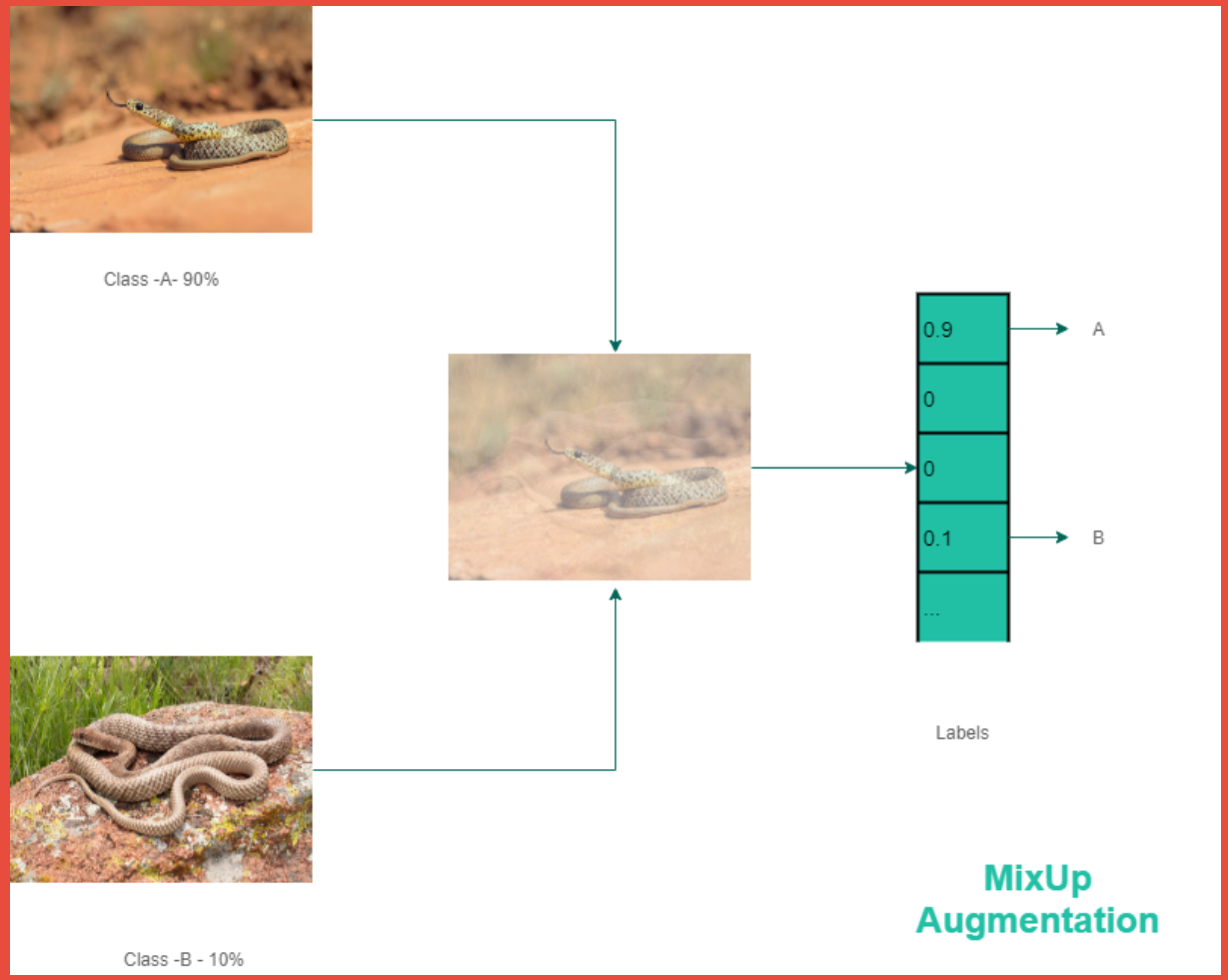
  Cross Entropy Loss

  Staircase based Learning Schedule

- **Base learning rate : 0.03**

  Decayed by factor of 10 at 3000,6000,9000 steps

Augmentation



Validation set results - Ablation study on 14,029 images

	Imagenet -1k	Imagenet-21k
Top 1 Accuracy	68.48%	79.57%
Top 5 Accuracy	87.70%	93.58%
F1 Score	0.27	0.5813

Using Metadata

- **Naive probability weighting approach**

  Multiply the probability of finding a species in a country with probability(precomputed) from classifier

  Locally improved from 0.5813 to 0.6019

- **0.625 F1 score**

Thank you