

Graphical Interactive Systems
Technische Universität Darmstadt



Animal Biometrics

Visual Computing Praktikum – SS 2018

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1. Introduction and Motivation
2. Problem 1: Classification of Individuals
 - Data Set
 - Architecture
 - Results
 - Alternative Approach
3. Problem 2: Classification of Species
 - Data Set





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Introduction and Motivation



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Insert image of Animal Biometrics here





1. Introduction and Motivation

2. Problem 1: Classification of Individuals

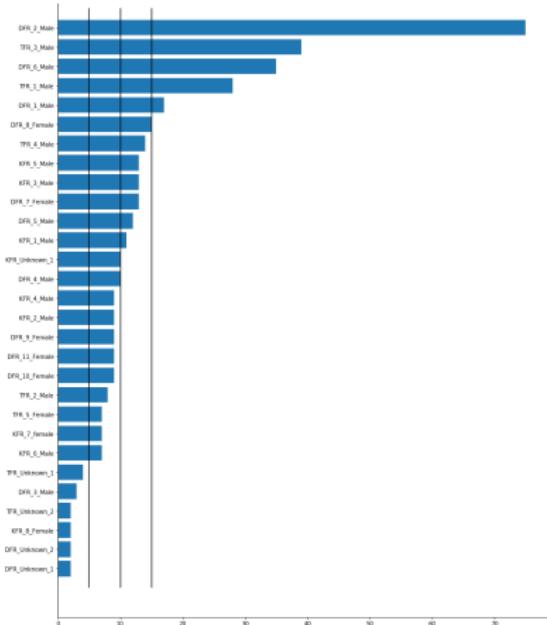
- Data Set
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3. Problem 2: Classification of Species

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Data Set



- ▶ Uneven data distribution (3 to 99 images per class)
- ▶ 29 classes/Individuals
- ▶ Low quality image from camera traps

Figure 1: ResNet Architecure

Good Example Images



Figure 2: DFR 2 Male



Figure 3: DFR 5 male

Bad Example Images



Architecture

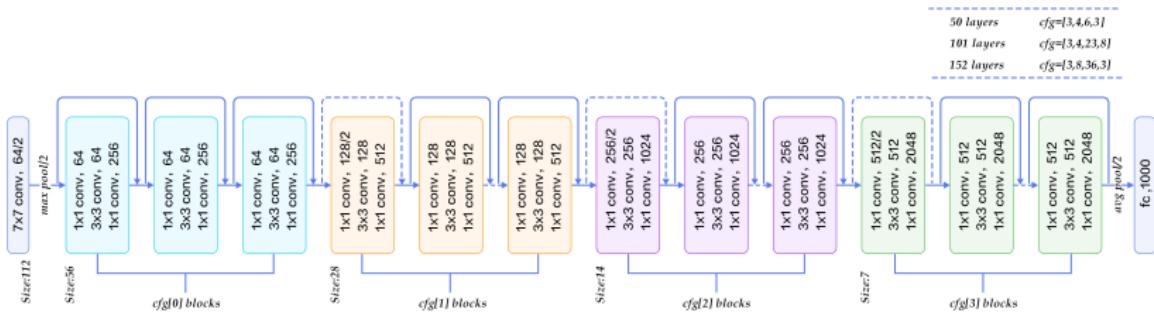


Figure 4: ResNet Architecture

- ResNet-18, ResNet-34 from scratch
- ResNet-50 finetuning

Scores



Insert Scores and conf mat here



Results



10



Figure 5: Network Attention



Results



11



Figure 6: Network Attention

Training Process



12

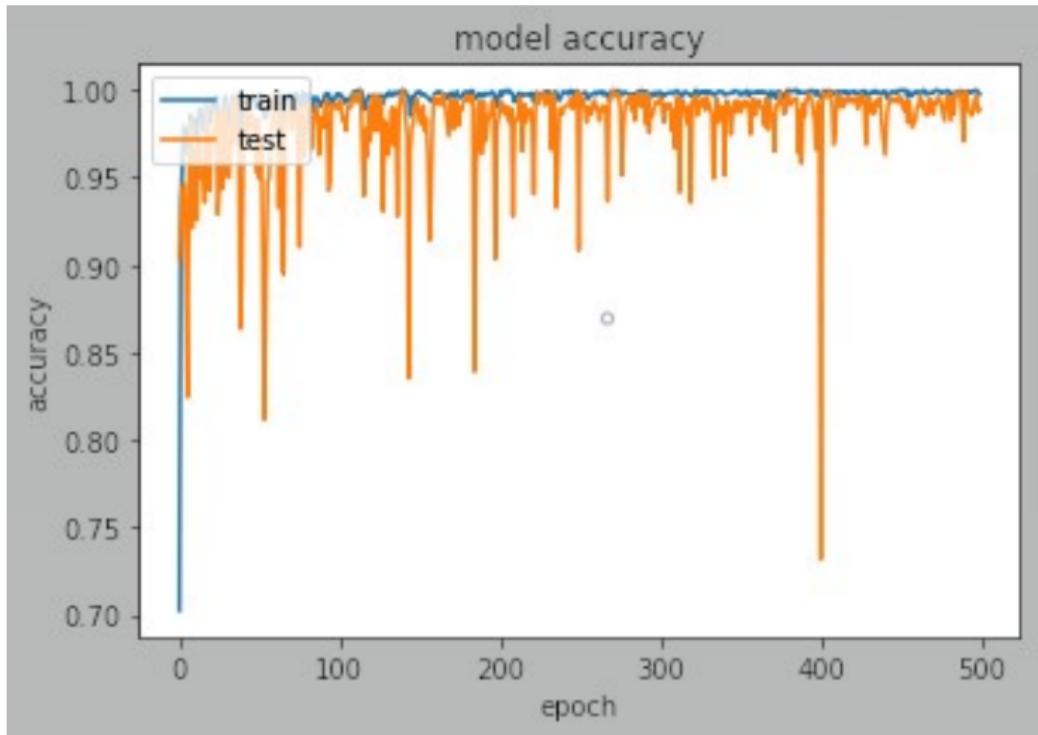


Figure 7: Accuracy development

Results



13

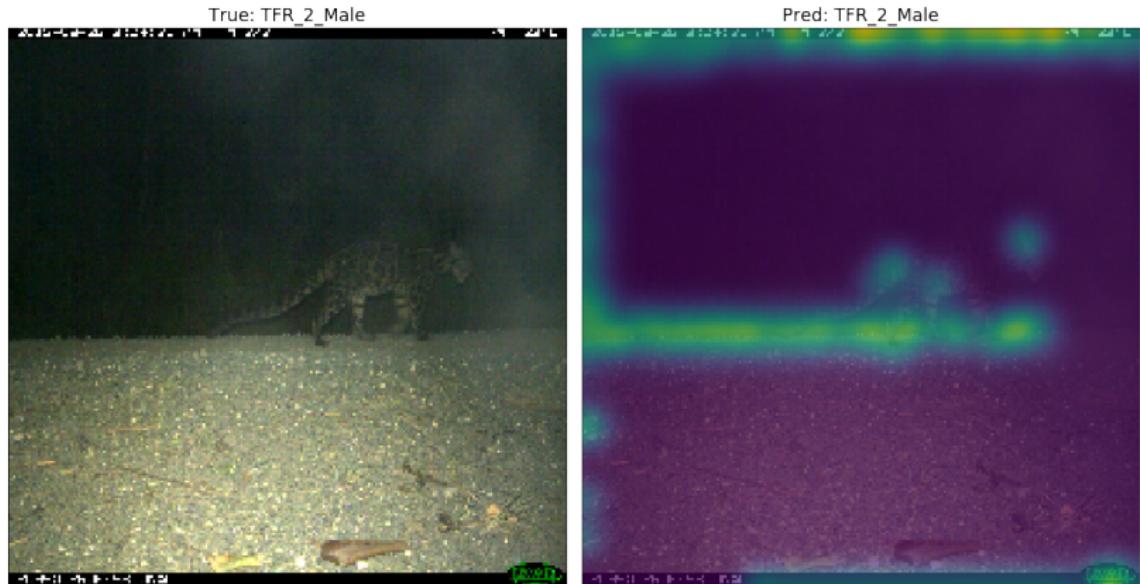


Figure 8: Network attention on logo and time stamp



Using Bounding Boxes

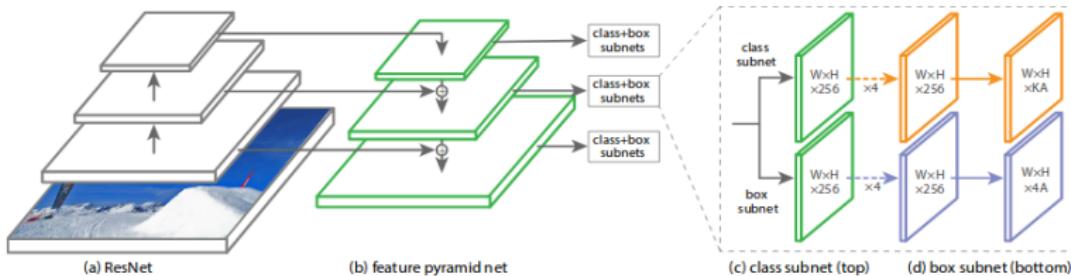


Figure 9: ResNet Architecture

- ▶ losses semantic information and detect small objects RPN
- ▶ used preferred backbone
- ▶ extract after each pooling layer feature maps – Feature pyramid network based on resnet

Scores



Insert Scores and conf mat here



Results



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Figure 10: Network attention on logo and time stamp



Results



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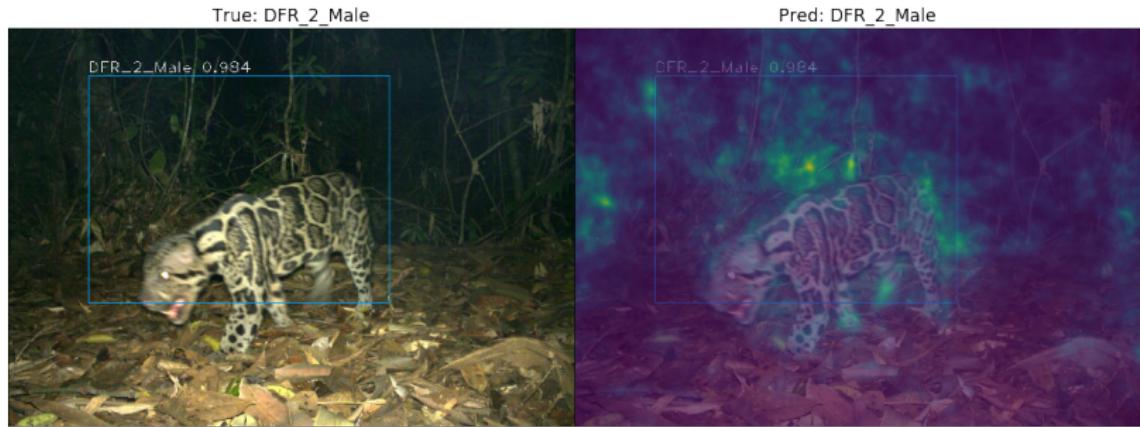


Figure 11: Network attention on logo and time stamp

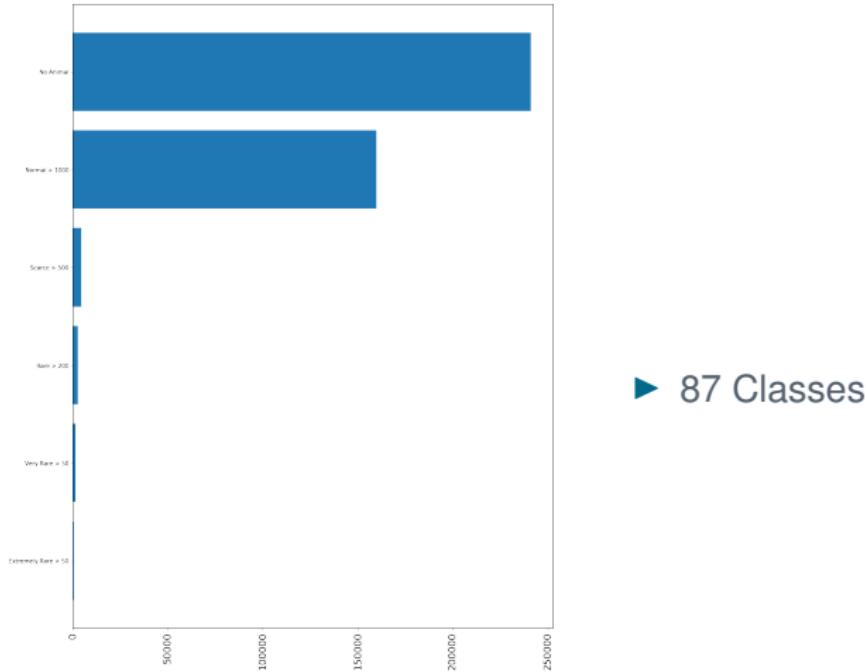




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Data Set



► 87 Classes

Figure 12: ResNet Architecture



Thank you for listening



Questions?