

# The mechanisms, powers and limitations of some Data Augmentation techniques

DD2424 Group 118

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# Techniques

- ▶ Basic augmentations
  - ▷ Rotation
  - ▷ Shearing
  - ▷ Flipping
  - ▷ Brightness adjustments
- ▶ Fourier transform
- ▶ Mixup

# Data



# Evaluation

- ▶ Basic CNN (65%)
- ▶ MobileNet (75%)
- ▶ ResNet50 (95%)

# Basic Augmentation



**Figure:** Rotation, shearing, flipping and brightness adjustments applied to a picture

# Fourier Transform

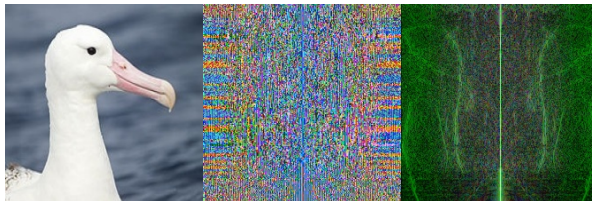


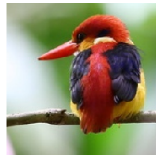
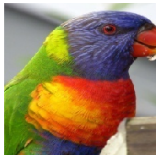
Figure: Left: Original image. Middle: Phase angles. Right: Amplitudes.

# Fourier Transform

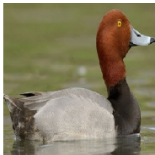
Table: Accuracies for the basic CNN

Data	Accuracy (%)
Raw Images	64.59
Fourier Angles	28.84
Fourier Amplitudes	48.42
Fourier Angles & Amplitudes	47.42

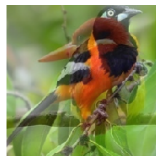
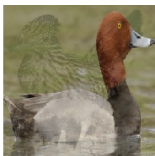
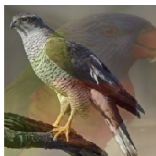
# Mixup



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# Mixup



Figure: Three examples of mixup performed on images of different bird species.

Mixup performances on different networks (for best set of parameters)