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
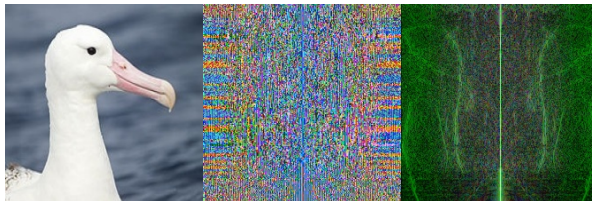
Fourier Transform

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 & Amplitueds	47.42

Mixup

Bird 1 + Bird 2 = Bird 3 images!!

Mixup

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

Mixup

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