

# Improving your Neural Network

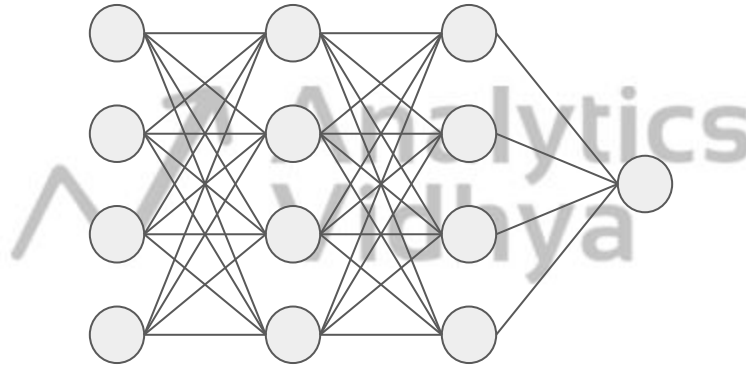
# Topics we will be covering

1. Why do we need Image Augmentation?
2. Different Image Augmentation Techniques
  - a. Image Rotation
  - b. Image Shifting
  - c. Image Flipping
  - d. Image Noising
  - e. Image Blurring
3. Guidelines to select right augmentation technique

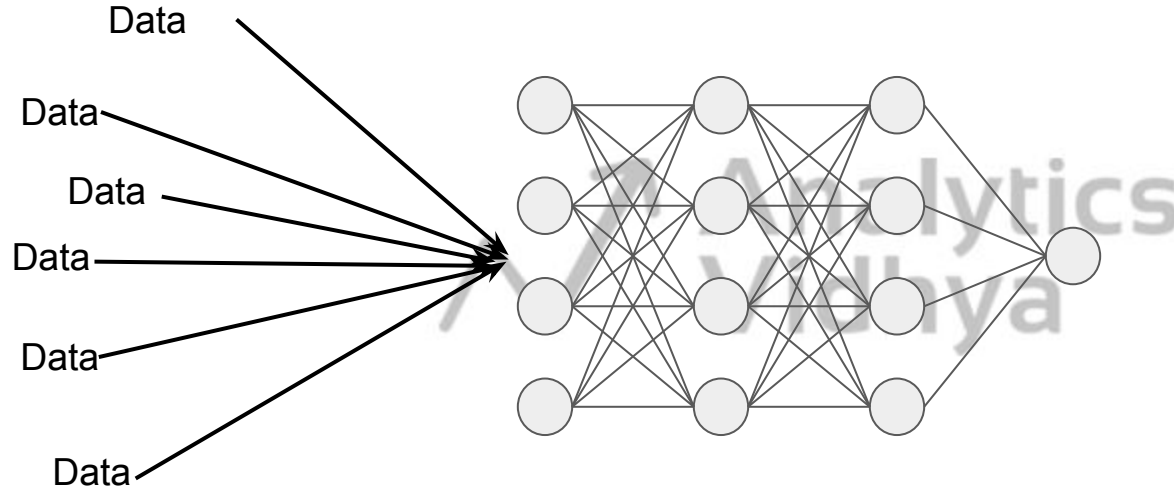
# Why do we need Image Augmentation?



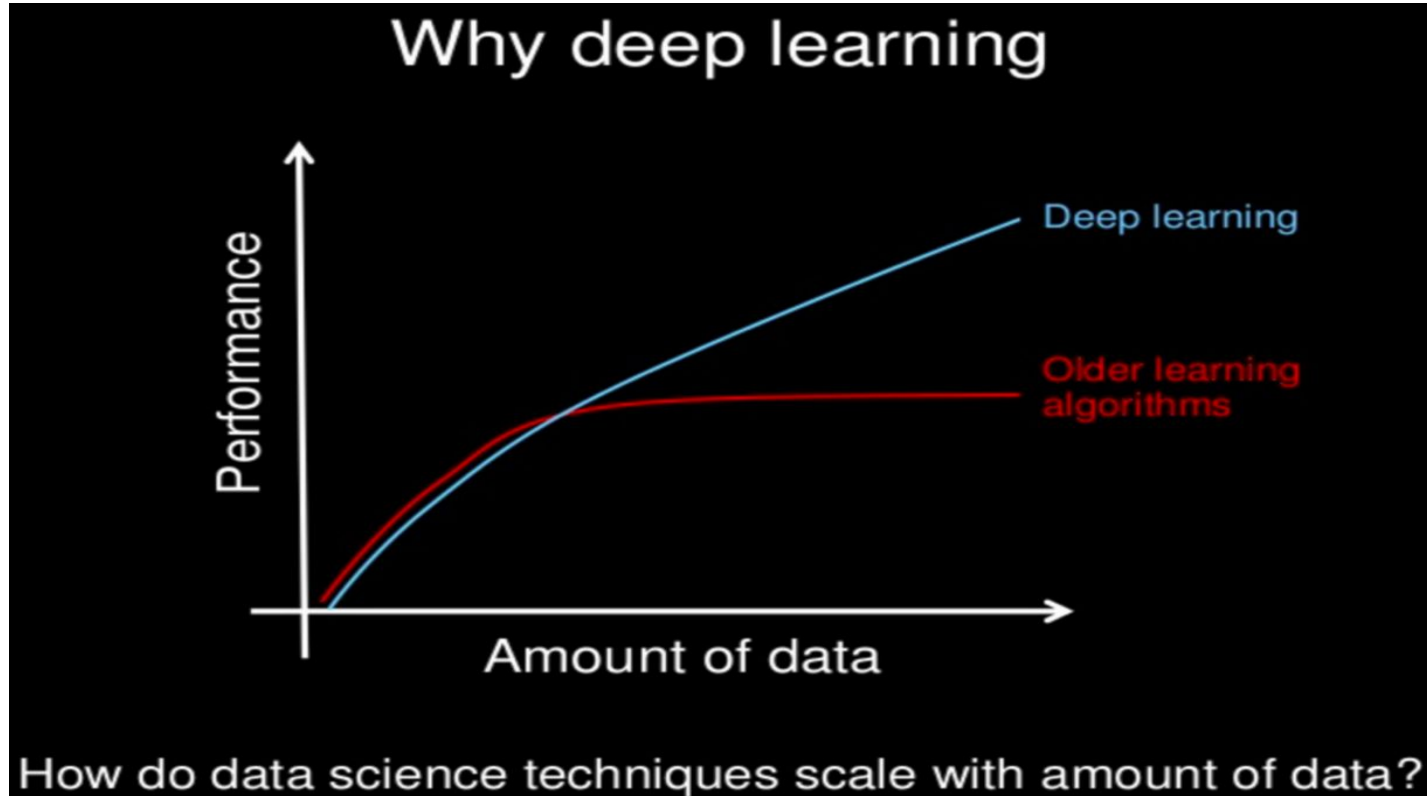
# Why do we need Image Augmentation?



# Why do we need Image Augmentation?



# Why do we need Image Augmentation?



# Why do we need Image Augmentation?



Data?

# Image Augmentation





# Image Augmentation



# Image Augmentation Techniques



# Image Augmentation Techniques

## 1. Image Rotation



# Image Augmentation Techniques

## 1. Image Rotation



Analy  
Vidhya



# Image Augmentation Techniques

1. Image Rotation
2. Image Shifting



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# Image Augmentation Techniques

1. Image Rotation
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# Image Augmentation Techniques

1. Image Rotation
2. Image Shifting



$$X = x + dx$$

$$Y = y + dy$$

# Image Augmentation Techniques

1. Image Rotation
2. Image Shifting
3. Image Flipping



# Image Augmentation Techniques

1. Image Rotation
2. Image Shifting
3. Image Flipping
  - a. Left-Right
  - b. Up-Down



# Image Augmentation Techniques

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2. Image Shifting
3. Image Flipping
  - a. Left-Right
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4. Image Noising



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Thank You!