

Data Augmentation

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Outline

- Learning Goals
- Data Augmentation
- Summary

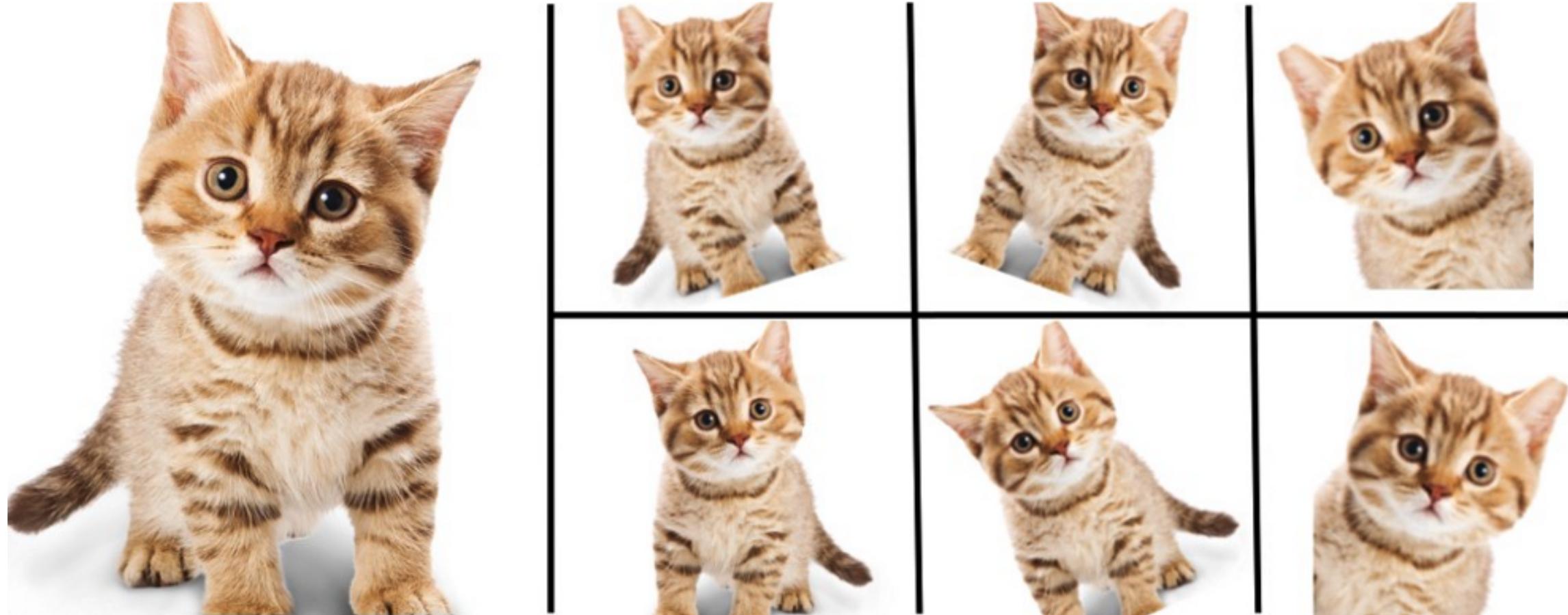
Learning Goals

- Understand how to use data augmentation to prevent model overfitting

Data Augmentation

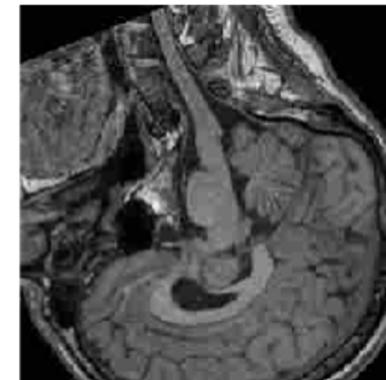
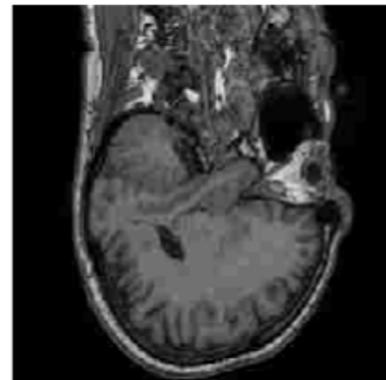
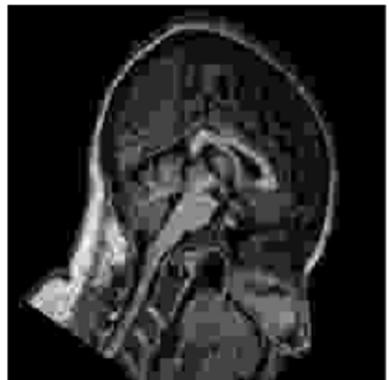
- Deep Learning models are largely dependent on the amount and the diversity of data available during training
- Data augmentation consists in synthesizing new data from the available data
 - Mitigates overfitting
 - Improves model performance
 - Address potential class imbalance in your dataset

Data Augmentation

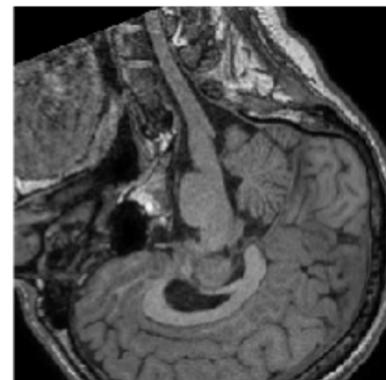
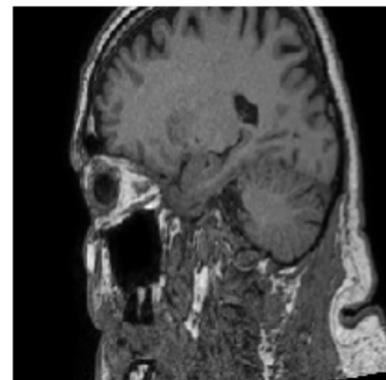
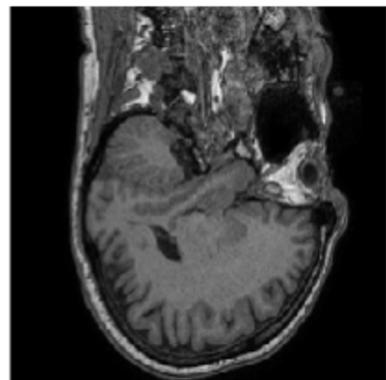
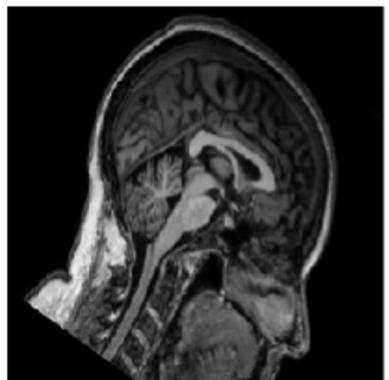


Data Augmentation

- Supervised Data = **Images + labels**



JPEG
compressed



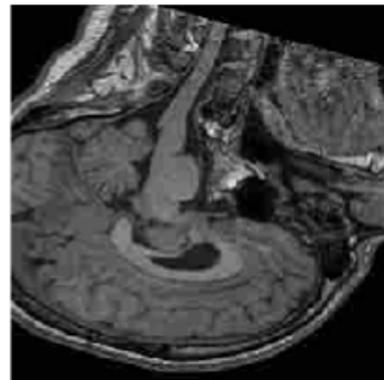
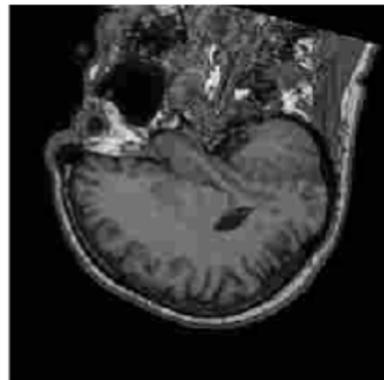
Reference

1st epoch

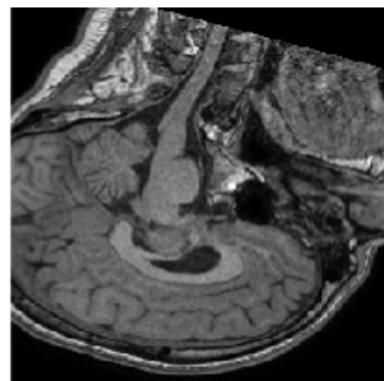
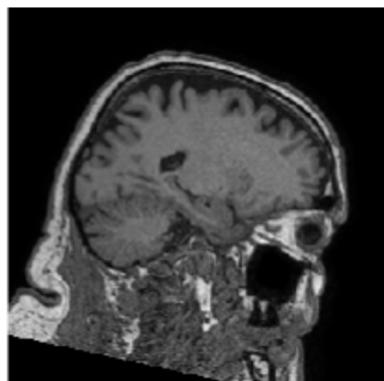
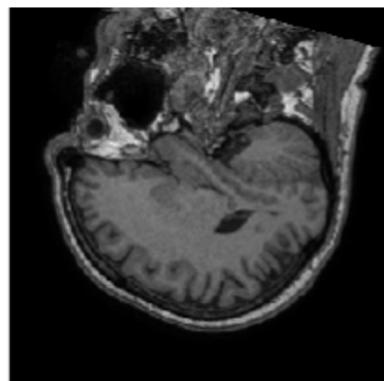
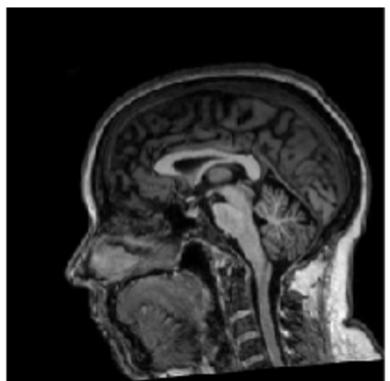
Data augmentation illustration
(regression)

Data Augmentation

- Supervised Data = **Images + labels**



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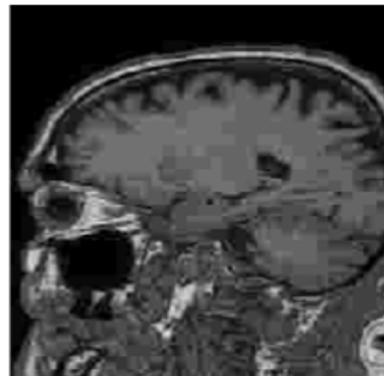
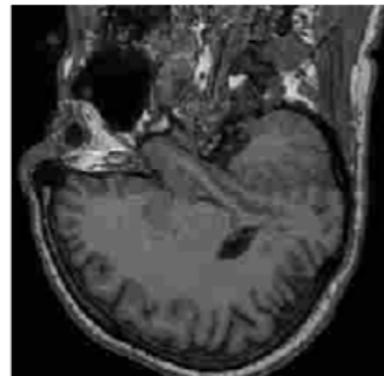
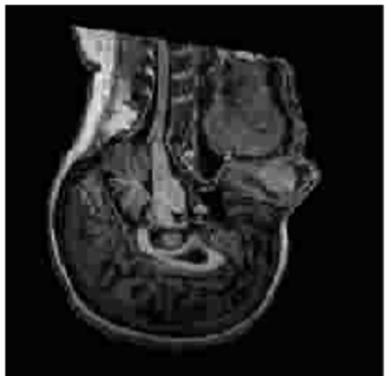
Reference

2nd epoch

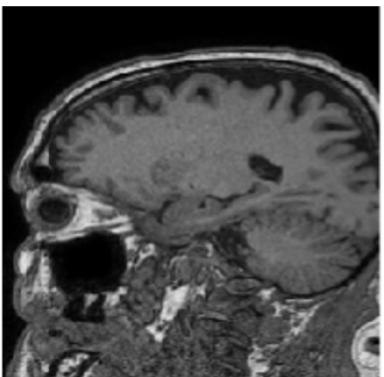
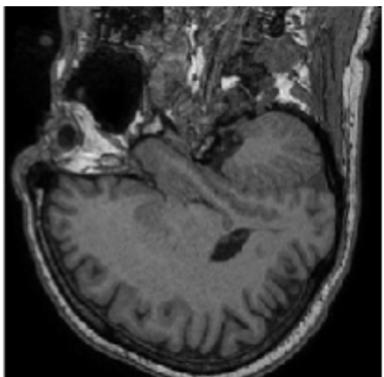
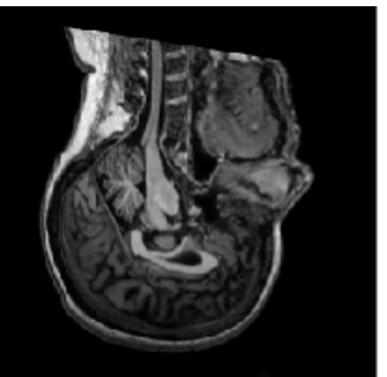
Data augmentation illustration
(regression)

Data Augmentation

- Supervised Data = **Images + labels**



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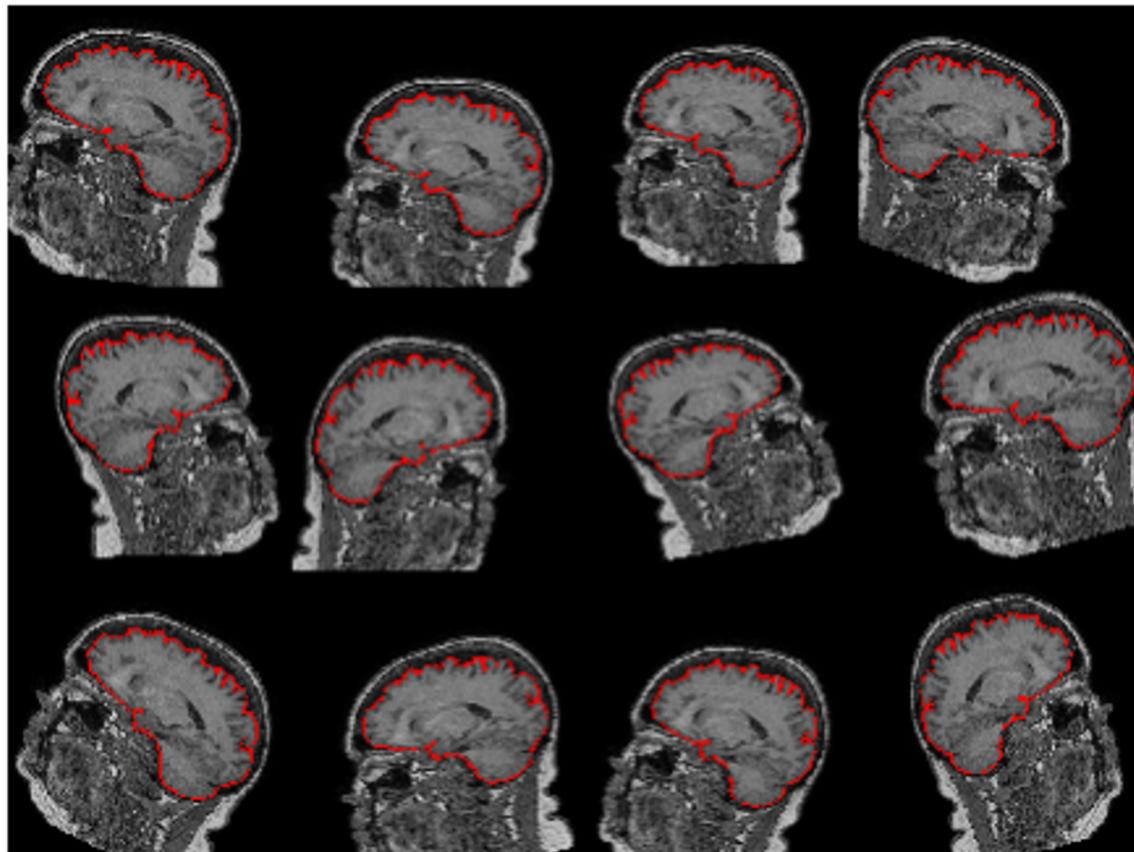


Reference

^{3rd epoch}
Data augmentation illustration
(regression)

Data Augmentation

- Supervised Data = **Images + labels**



**Data augmentation illustration
(segmentation)**

Summary

- Data augmentation is an efficient method for preventing model overfitting and can improve model accuracy
- It can also be used to address data class imbalance in the dataset

Thank you!



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