

IESTI01 - TinyML

Preventing Overfitting

Prof. Marcelo Rovai

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Preventing Overfitting

More Data, Data Augmentation (artificial)

Preventing Overfitting

+Data

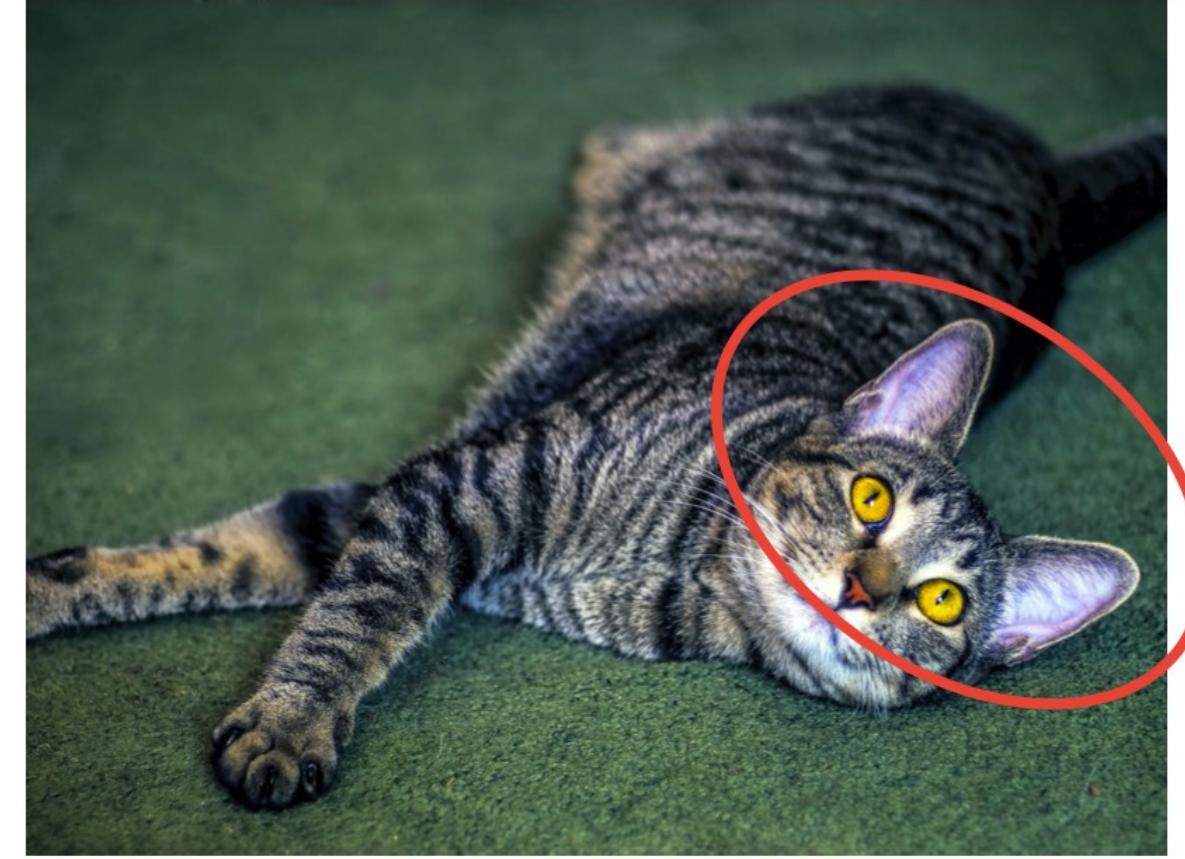
+Data

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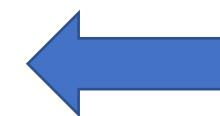
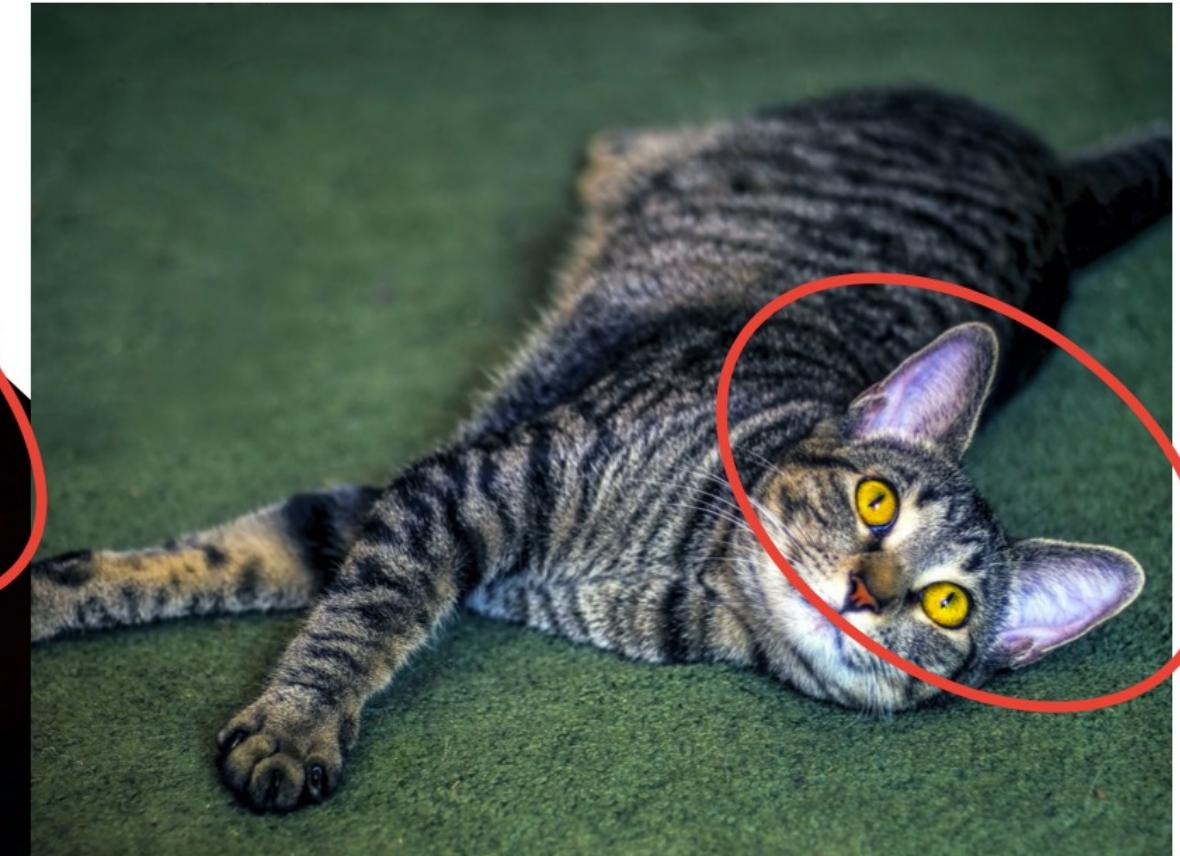
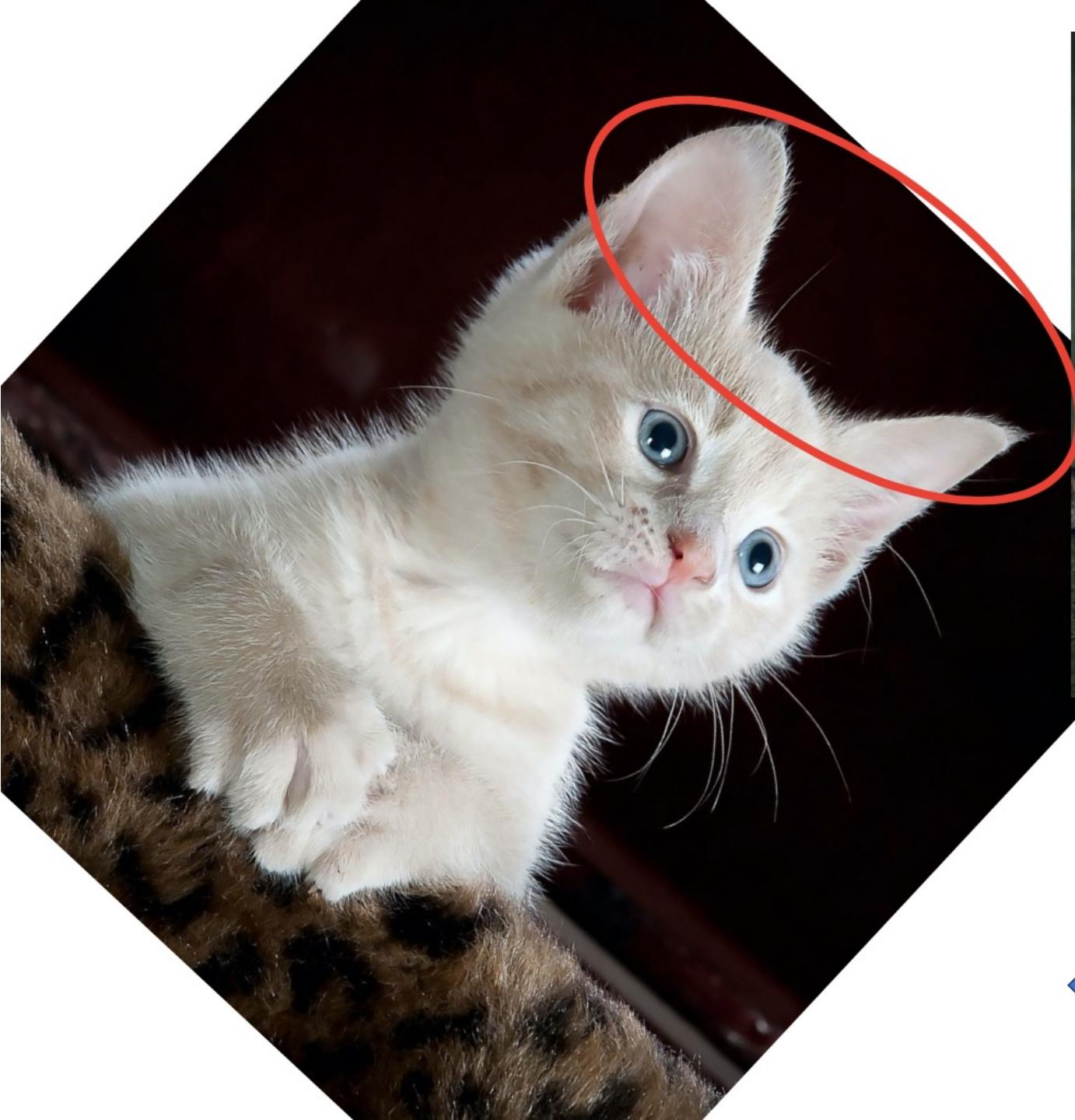
+Data



← Training



← Training ↑ Inference



Training with
Data Augmentation

```
# Updated to do image augmentation  
train_datagen = ImageDataGenerator(  
    rescale=1./255,  
    rotation_range=40,  
    width_shift_range=0.2,  
    height_shift_range=0.2,  
    shear_range=0.2,  
    zoom_range=0.2,  
    horizontal_flip=True,  
    fill_mode='nearest')
```





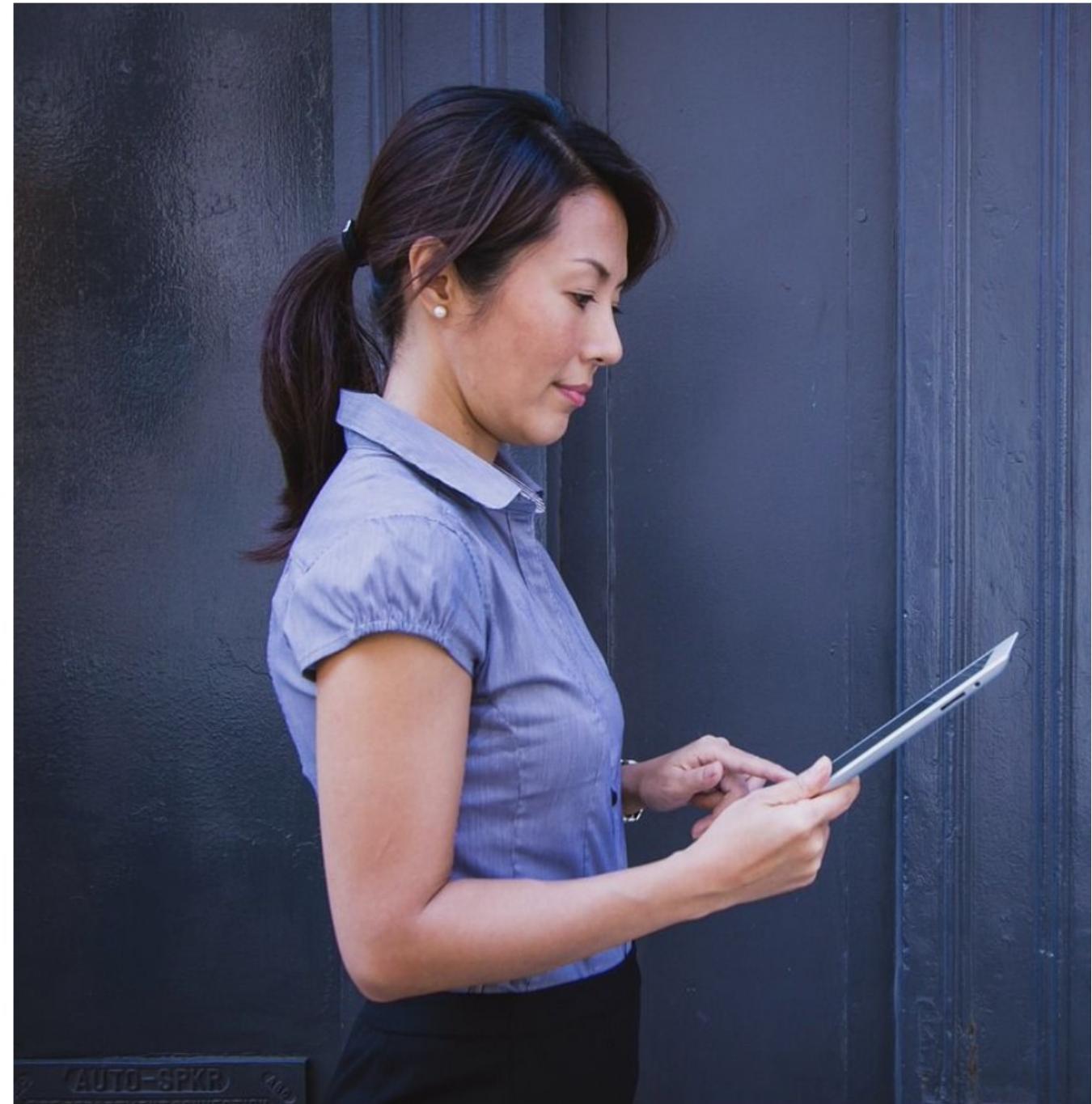
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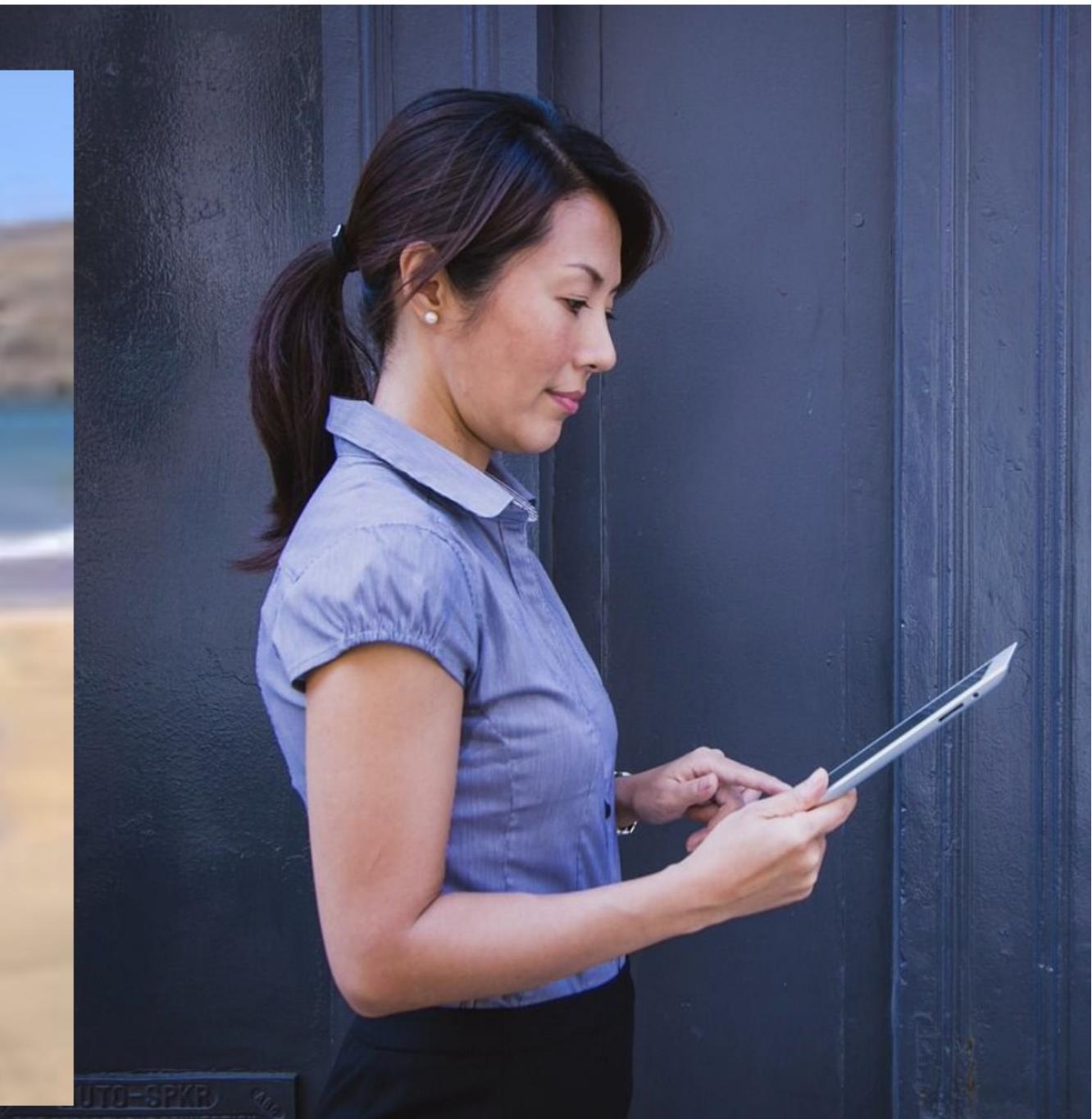




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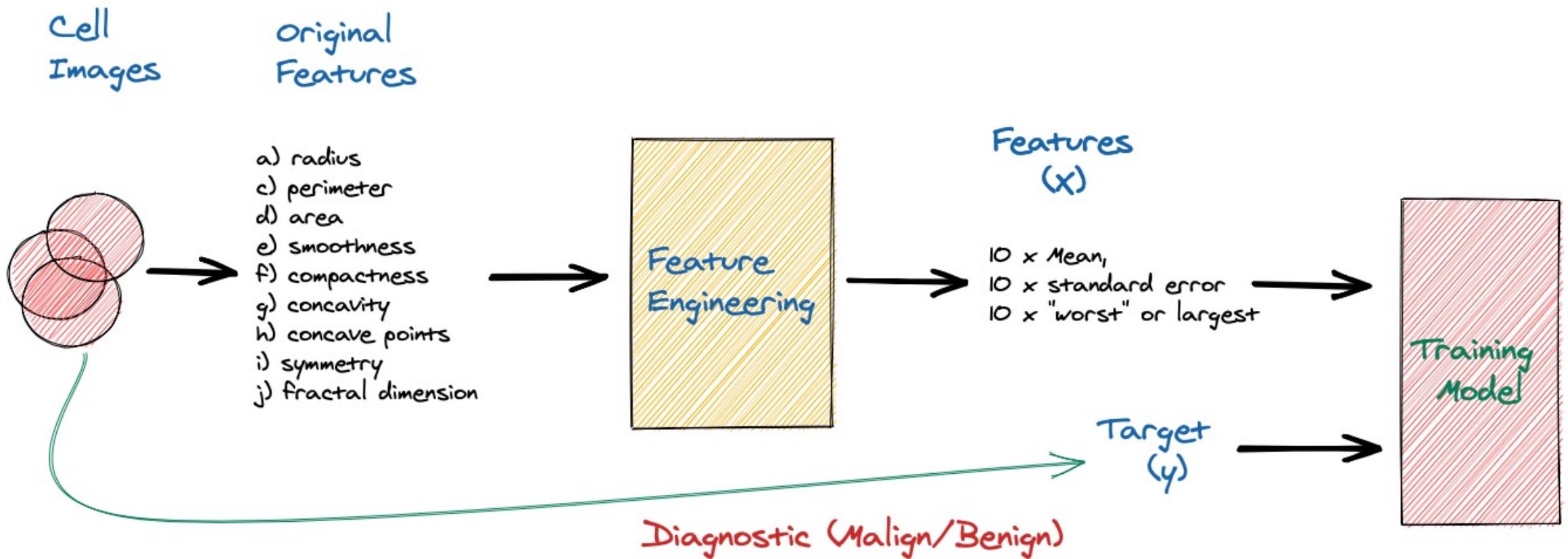
Early Stopping & Dropout Regularization

Wisconsin Diagnostic Breast Cancer (WDBC)

Code Time!

Breast_Cancer_Classification.ipynb





UCI ML Breast Cancer Wisconsin (Diagnostic) datasets. <https://goo.gl/U2Uwz2>

Reading Material

Main references

- [Harvard School of Engineering and Applied Sciences - CS249r: Tiny Machine Learning](#)
- [Professional Certificate in Tiny Machine Learning \(TinyML\) – edX/Harvard](#)
- [Introduction to Embedded Machine Learning \(Coursera\)](#)
- [Text Book: "TinyML" by Pete Warden, Daniel Situnayake](#)

I want to thank [Laurence Moroney](#) from Google, Harvard professor [Vijay Janapa Reddi](#), Ph.D. student [Brian Plancher](#) and their staff for preparing the excellent material on TinyML that is the basis of this course at UNIFEI.

The IESTI01 course is part of the [TinyML4D](#), an initiative to make TinyML education available to everyone globally.

Thanks
And stay safe!

