Workshop Solving Machine Learning Problems in TensorFlow/Keras

- **Formato do curso:** Live training
- **Preço:** 935€
- **Duração:** 14 horas

This TensorFlow/Keras course enables further exploration of Machine Learning methods into the world of images. In order to easily grasp the concepts listed below, the student should already be familiar with Basic Machine Learning.

Esta formação é ministrada em Inglês.

Em parceria com a entidade acreditada:

DevOps Artisan

Pré-requisitos

- [Machine Learning in Tensorflow/Keras Fundamentals](#)

Nice to have:

- Basic Deep Learning
  - Neurons
  - Types of Layers
  - Networks
  - Loss Functions
  - Optimizers
  - Overfitting
  - Tensorflow

- Basic Image Processing/Computer Vision
  - Encoding
  - Color Spaces
  - Convolutions
  - OpenCV/PIL

Programa

Introduction to Deep Learning in Image Processing

- Machine Learning and Deep Learning
- Neural Network Anatomy
- Types of Convolutions
- Keras Workflow

Basic Image Processing and Computer Vision

- Pixels and Images
- Coordinate System
- Channels
- OpenCV
- Channel Ordering
- Blur and Sharpen kernels

Hands-on Lab:

- Learn basic Image Processing using OpenCV
- Learn to apply different filter kernels on images for blur generation or basic edge detection

Supervised Neural Networks and Regularization

- Underfitting
- Overfitting
- Reducing the networks size
- Weight Regularization: L1, L2, Elastic
- Dropout
- Batch Normalization

Hands-on Lab: Implement your first basic neural network, learn how to benchmark it and learn how to avoid overfitting on a Computer Vision classification task

Convolutional Neural Networks

- Convolutional Layers
- Depthwise Convolutions
- Building Convolutional Neural Networks in Keras
- 1×1 Convolutions

- Data Augmentation

Hands-on Lab: Improve your previous neural network by adding Convolutional Layers, benchmark them and compare them with the Fully Connected ones

Common Convolutional Neural Networks Architectures

- ImageNet
- AlexNet
- VGGNet
- ResNet
- MobileNet

Hands-on Lab: Learn how to use already state of the art models from the Keras Hub.

Reusing Convolutional Neural Networks

- Object Localization
- Object Segmentation
- Reusing VGG
- Fine-tuning

Real World Machine Learning

- Tensorboard
- Deploying Deep Learning Models
- Choosing the algorithm

Learn how to fine parameter tune your already trained Convolutional Neural Network to fit your task

Explainable AI

- Visualizing intermediate activations
- Visualizing convnet
- Visualizing heatmaps

Unsupervised Generative Models for Image Processing

- Autoencoders for Images
- Deblurring
- Image generation

Hands-on Lab:

- Generate a new image similar to the ones from the dataset by using a random seed
- Face generation techniques

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