

# Workshop Natural Language Processing using Deep Learning

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

Natural Language Processing using Deep Learning course is suited for those who want to learn how to process and understand text. It covers the most popular architectures, including Recurrent Neural Networks and Hidden Markov Models.

It would be preferred to take the Basic Machine Learning course beforehand so the student is accustomed to the vocabulary and the main frameworks.

**Esta formação é ministrada em Inglês.**

Em parceria com a entidade acreditada:



## 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 Natural Language Processing
    - Tokenization
    - Bag of words
    - Tf-idf
    - Stemming
    - Lemmatization
    - Language models
    - Sentiment analysis
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## Programa

### **NLP applications**

#### **Word vectors**

- What are vectors?
- Word analogies
- TF-IDF and t-SNE
- NLTK
- GloVe
- Word2vec
- Text classification using word vectors

Hands-on Lab:

- Performing a basic text classification using multiple word vectors models
- Improve it by using basic text processing and language models to get the data ready for machine learning

#### **Language modeling**

- Bigrams
- Language models
- Neural Network Bigram Model

Hands-on Lab:

- Performing text classification using neural networks based on language models
- Understand the probabilistic modeling of language model, how to improve the context of a word and how synonyms can be generated and how basic neural networks generate powerful language models

#### **Word Embeddings**

- CBOW
- Skip-Gram
- Negative Sampling

Hands-on Lab: Understand advanced techniques for language modeling like Skip-Gram and Negative Sampling by

implementing them and learn to predict the next most likely word in a conversation

## **NLP techniques**

- What is POS Tagging?
- POS Tagging Recurrent Neural Network
- POS Tagging Hidden Markov Model (HMM)
- Named Entity Recognition (NER)
- POS vs. NER

Hands-on Lab: Use NLTK and SCIPY to improve your classification using grammar rules and POS, then use NER to highlight the most valuable content of a phrase, afterwards implement summarization

## **Recurrent Neural Networks**

- LSTM
- GRU
- Text Generation

Hands-on Lab:

- Implement in Keras a basic RNN architecture for word prediction, using the already studied word embeddings
- Benchmark the performances of LSTM compared to GRU and BiLSTM

## **Generative Neural Networks**

Hands-on Lab:

- Implement in Keras your own generative model that generates lyrics similar to the ones from Shakespeare
- Learn to make Transfer Learning on text