

Introduction to Deep Learning

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Abstract

Deep Learning is one of the most popular fields in Artificial Intelligence nowadays for complex data analysis such as text, video, images, audio, and so on. Deep Learning models are currently the state of the art in applications like self-driven cars, cooperative video games, computer vision, natural language processing, so many others. This course covers the fundamentals in Neural Networks and Deep Learning with a practical perspective in architectures such as Convolutional, Recurrent Neural Networks, and Autoencoders. In this course you are going to learn how to build Artificial Neural Networks in Python with Pytorch to work with images and text data.

Audience:

The target audience for this course is for students and teachers with notions in Machine Learning or Deep Learning with the aim to develop small applications for images and text classification.

Outline:

- Fundamentals of Neural Networks and Deep Learning
 - Brief historical view
 - Motivation for Deep Learning
- Learning process of Neural Networks
 - Gradient Descent and backpropagation
 - Hyperparameter tuning
 - Techniques to improve learning
- Convolutional Neural Networks for image classification, and related tasks.
- Recurrent Neural Networks for natural language processing
- Deep Autoencoders

Software/Hardware requirements:

- Python 3.x
- Pytorch
- Anaconda (desired for practicality)
- Jupyter (desired for practicality)

Speaker resume:

Raúl Navarro-Almanza is a Ph.D. student in the Chemistry Science and Engineering School at the Autonomous University of Baja California. He is working in Interpretable Machine Learning models and techniques for the black-box-models explanation through hybrid systems. He holds a master's degree in computing science at the same university, where he worked on the automated generation of knowledge bases from unstructured texts using Deep Learning techniques for education applications. His research interests are in areas such as Deep Learning, Neuroscience, Interpretable Machine Learning, Semantic Knowledge Bases, and Granular Computing.