

Deep Learning

To start the module, you will need google colab!

The Deep Learning (DL) module constitutes a multifaceted yet profoundly captivating domain within the purview of inquiry. Encompassed within the expansive expanse of DL's ambit are a plethora of domains ranging from image, video, and audio perception to vehicular safety systems encompassing functionalities such as automated braking, cruise control, and lane assistance, among others.

Deep Learning Basics

Within this instructional unit, our aim is to impart fundamental tenets of Deep Learning (DL), thereby bestowing upon you a comprehensive overview of the essence of DL. Of paramount significance is the elucidation of a pivotal architectural construct that presides over the realm of Deep Learning, namely, the neural network.

`deep_learning_basics` challenge

Optimizer, Loss & Fitting

Upon acquiring the initial arsenal of competencies requisite for the manipulation of neural networks (NNs), our pedagogical trajectory endeavors to augment your repertoire. This augmentation manifests through the elucidation of the art of precision calibration within NNs, thereby imbuing you with the capacity to adeptly optimize these constructs to align with your desired outcomes.

A pivotal facet of this instructional odyssey involves the cultivation of proficiency in discerning and implementing the judicious refinement mechanisms that catalyze the operational efficiency of NNs. This perspicacious journey culminates in equipping you to harness the latent potential of NNs for the discernment and mitigation of credit card fraud—a quintessential challenge that underscores the confluence of theoretical understanding and pragmatic application in the realm of neural network-enabled solutions.

`optimizer_challenge`

Convolutional Neural Networks

At this juncture, a paradigm shift is imminent as we embark upon an ascent to a higher echelon of comprehension, thereby engendering an erudition of Convolutional Neural Networks (CNNs). Should the anticipation of delving into the realms of image recognition have been your prevailing disposition, the juncture has duly arrived. CNNs constitute the linchpin of processing and imbuing images with a semblance of “comprehension,” a pivotal tenet that finds applicability in diverse domains, such as automated caption generation and facial recognition, among an array of other nuanced applications.

The discourse herein is poised to unravel the intricacies of CNNs, illuminating key facets including kernels and convolutions, which serve as the fundamental pillars underpinning the efficacy of CNNs. This elucidation shall pave the way for an adept grasp of the pivotal mechanisms intrinsic to CNNs, thus equipping you with a sophisticated comprehension of their inner workings and facilitating your prowess in harnessing their capabilities for image analysis and interpretation.

cnn_challenge

Recurrent Neural Networks

Recurrent Neural Networks (RNNs) operate within the purview of quandaries characterized by sequential data constituting the input milieu. Conundrums of this nature encompass an eclectic array of domains, including but not limited to video analysis, stock market valuation, and meteorological prognostications. The intrinsic ability of RNNs to grapple with the temporal dynamics inherent to sequential data renders them an indispensable toolset for addressing multifarious challenges situated within these aforementioned spheres.

rnn_challenge

Natural Language Processing

Natural Language Processing (NLP) constitutes a pivotal field in the domain of artificial intelligence, encompassing a wide spectrum of applications aimed at enabling machines to comprehend, interpret, and generate human language

nlp_challenge

Assesment and...

Final Project!

In the final project you have to use the Word2Vec embedding to perform a sentiment analysis task. You will be able to, based on an input movie review, say whether the comment is positive or negative.

Timeline

Day one

Setup

Deep Learning Basics

Optimizer, Loss & Fitting

Challenges

Day two

Convolutional Neural Networks
Recurrent Neural Networks
Challenges

Day three

Natural Language Processing
Challenges

Day four

Assessment
Project
