
Deep Learning

Marc Lelarge, Jill-Jenn Vie, and Kevin Scaman

Class notes by Antoine Groudiev



Last modified 1st June 2024

Contents

1	Introduction and general overview	2
2	Automatic differentiation	2
3	Introduction to Reinforcement Learning	2
4	Optimization and loss functions	2
5	Convolutional Neural Networks	2
6	Recursive Neural Networks	2
7	Attention and Transformers	2
8	Robustness and regularity	2
9	Q-Deep Learning for Breakout	2
10	Autoencoders	2
11	Generative Adversarial Networks	2
12	Normalizing Flows	2

Abstract

This document is Antoine Groudiev's class notes while following the class *Deep Learning* at the Computer Science Department of ENS Ulm. It is freely inspired by the class notes written by Marc Lelarge, Jill-Jenn Vie, and Kevin Scaman.

- 1 Introduction and general overview**
- 2 Automatic differentiation**
- 3 Introduction to Reinforcement Learning**
- 4 Optimization and loss functions**
- 5 Convolutional Neural Networks**
- 6 Recursive Neural Networks**
- 7 Attention and Transformers**
- 8 Robustness and regularity**
- 9 Q-Deep Learning for Breakout**
- 10 Autoencoders**
- 11 Generative Adversarial Networks**
- 12 Normalizing Flows**