

Presentation

Introduction to Deep Learning



2014



2015



2016



2017



2018



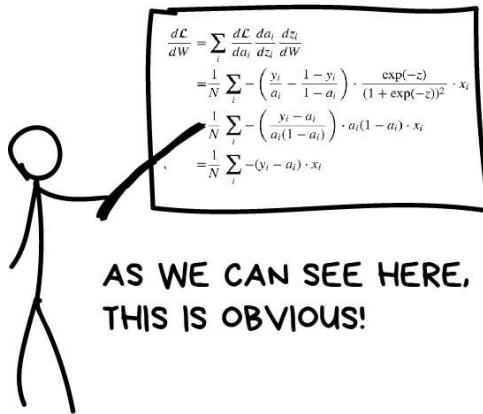
2019



2021



2023



AS WE CAN SEE HERE,
THIS IS OBVIOUS!

PROGRAMMERS ARE PROGRAMMING!

DATASCIENCE!

PROFESSION OF FUTURE!

IN THE NEXT FIVE YEARS...

EXPONENTIAL GROWTH!!!

SMART MACHINES!

A-A-A-A-A-A-A-A-A-A-AAA!!!!!!



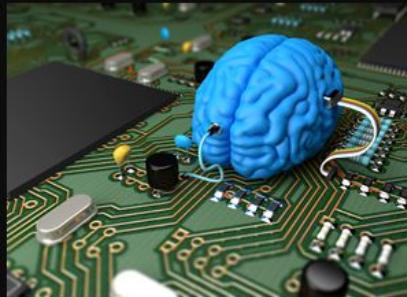
TWO TYPES OF ARTICLES ABOUT MACHINE LEARNING

https://vas3k.com/blog/machine_learning/

Deep Learning



What society thinks I do



What my friends think I do



What other computer
scientists think I do



What mathematicians think I do



What I think I do

```
from theano import *
```

What I actually do



Mark Tenenholz
@marktenenholz

ML is only as useful as it creates value

Nobody cares if you apply an LSTM to a problem that could be solved by a heuristic.

It's actually a bad thing.

Data scientists are hired for their problem-solving creativity first, and the ability to use ML to do it second.

12:00 PM · Mar 24, 2022

Other DL courses



Yann LeCun's Deep Learning Course:

<https://cds.nyu.edu/deep-learning/>

Theoretical Foundations for Deep Learning:

<http://people.csail.mit.edu/moitra/408b.html>

Theoretical Principles for Deep Learning:

<http://mitliagkas.github.io/ift6085-dl-theory-class/>

Learning outcomes

- Understanding of DL models for *real-world applications*
- Identify *foundational building blocks* in DL
 - Including popular network architectures
- Ability to *formulate and solve problems* using DL

Course instructors



Responsible teacher and lecturer

Prof. Dr. Luis A. Leiva

Supporting teacher and lecturer

Dr. Bereket A. Yilma

Teaching assistant

Mr. Nima Gozalpour

Guest lecturers

Dr. Dariush Salami (Nokia-Bell Labs)

TBA

Workload

ECTS	5
Lectures	28 h
Practicals	14 h
Assignments & self study	78 h
Project presentations	5 h

Prerequisites

Familiarity with Machine Learning

Proficiency with Python programming

Willing to learn new things



Course evaluation



No exam!

Student project

Identify a problem you want to solve

Conduct research to solve that problem

Write a *tech report* (max 8000 words)

Deliver a 5 minutes *presentation*

Grading (20pt scale)

Report (max 16pt) + Presentation (max 4pt)

The most promising projects will be encouraged to submit a research paper.

Course topics



1. Introduction
2. Discriminative modeling I: Classification
3. Discriminative modeling II: Regression
4. Unsupervised learning
5. Sequence learning
6. Generative modeling
7. Reinforcement learning
8. Deployment and best practices
9. Project presentations

Schedule



February 2024						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

March 2024						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April 2024						
Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May 2024						
Su	Mo	Tu	We	Th	Fr	Sa
				12	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Check Guichet Etudiant for the classroom number (it may change weekly)

Tentative timeline of course topics



29.02 Introduction (I)

07.03 Introduction (II)

14.03 Introduction (III)

21.03 Classification

28.03 Regression

04.04 Holiday (Holy week)

11.04 Unsupervised learning

18.04 Sequence modeling

25.04 Generative modeling (I)

02.05 Generative modeling (II)

09.05 Holiday (Europe day)

16.05 Reinforcement learning

23.05 Deployment and best practices

30.05 Project presentations

Weekly timeline

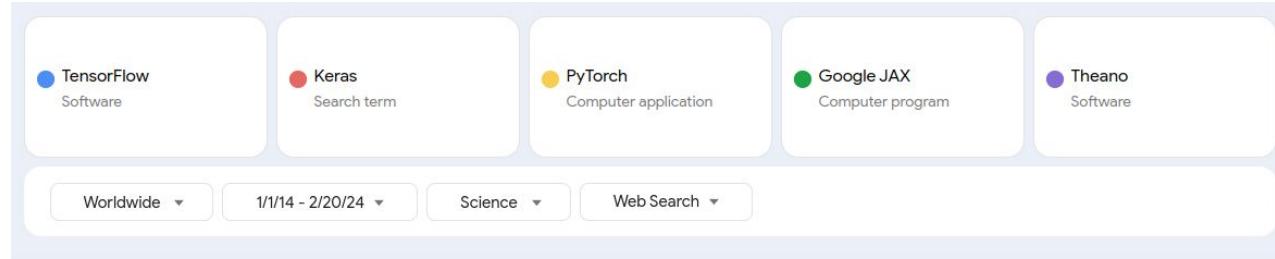


Tentative

14:00 ~ 15:30 Lecture

15:45 ~ 16:30 Practical

Software

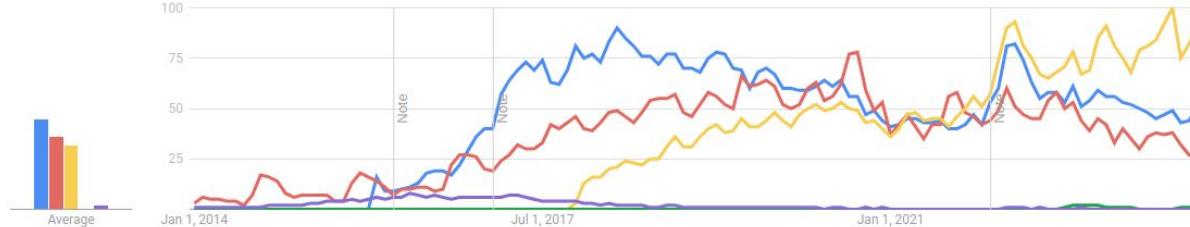


! Note: This comparison contains both Search terms and Topics, which are measured differently.

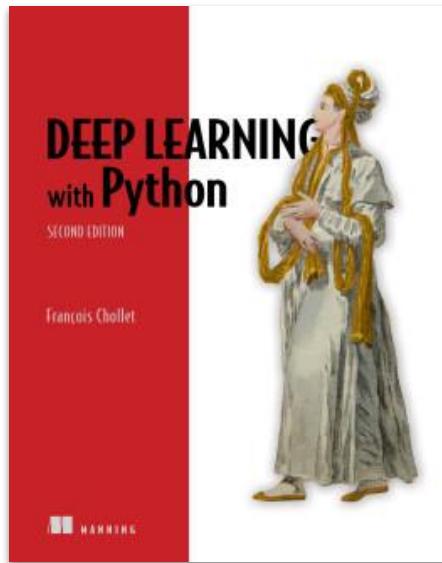
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Recommended textbook



**Deep Learning with
Python 2nd ed.**

Live e-book: <https://livebook.manning.com/book/deep-learning-with-python-second-edition/>

Course feedback



1. **Moodle forum:** <https://moodle.uni.lu/mod/forum/view.php?id=253408>
2. **Email:** luis.leiva@uni.lu and bereket.yilma@uni.lu
3. **Office hours:** book an appointment via email

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The [disciplinary procedure for fraud and plagiarism](#) provides the following definitions:

Fraud or attempted fraud: forms of academic misconduct that intend to falsify the result of an examination or other summative assessment.

Plagiarism: the act, voluntary or involuntary, of copying another person's work and passing it off as one's own.

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