



Introduction to Machine Learning

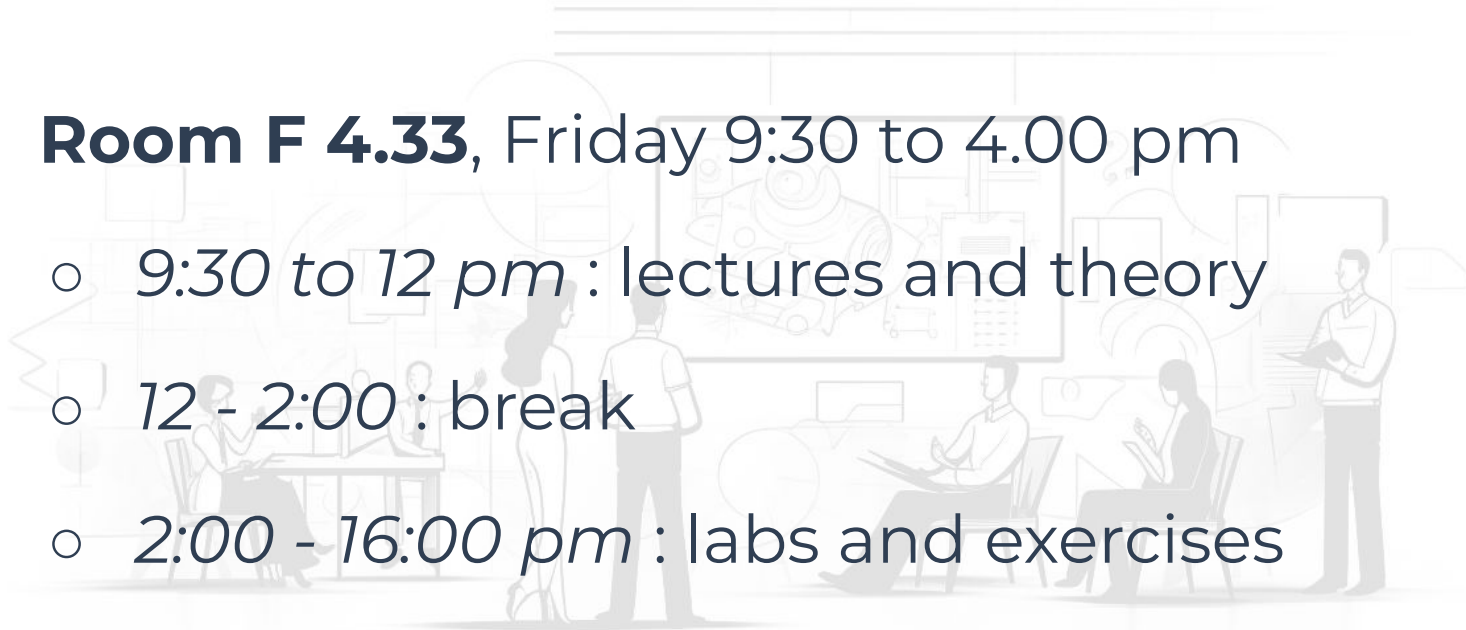
Haute École de Gestion (HEG)

Dr. Nils Schaetti

2023 – 2024

About the course

- **Room F 4.33**, Friday 9:30 to 4.00 pm
 - *9:30 to 12 pm* : lectures and theory
 - *12 - 2:00* : break
 - *2:00 - 16:00 pm* : labs and exercises



About the course

- **Lectures:** Dr. Nils Schaetti
 - Researcher at the Data Mining and Machine Learning (DMML) group
 - (nils.schatti at hesge.ch)
- **Labs:** Imahn Shekhzadeh
 - PhD Student at UniGE and DMML group



Courses and evaluation

- **Courses :**
 - 17, 24 november
 - 1, 8, 15, 22 december
 - 12 january 2024
- **Final note :** 50% exercices, 50% exam
 - *Exercises* : 2 points
 - *Exam* : 2 hours, on paper
 - 19 january, 8h-10h, Aula
 - Question (theory) and exercises

Goals the course

1. Understand the principles behind ML and learn how to use models.
2. Make the link between mathematics (linear algebra, calculus, statistics) and ML.
3. Have a intuitive and theoretical understanding of how ML models and neural networks are trained.
4. Be able to train ML algorithms and make some prediction.
5. Know how to properly evaluate models and select a good one.

Overview of the course

**Introduction to
Machine Learning**
What is Machine Learning ?



Learning Theory
How a machine can learn ?



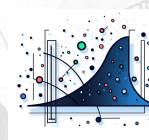
**Mathematics for
Machine Learning**
What's the link between ML
and Mathematics



Linear Regression
How to predict data ?



Logistic Regression
How to classify data ?



**Introduction to Neural
Networks**
What's a formal neuron and
how can it learn ?



And practical exercises !

Frameworks



References

CyberLearn

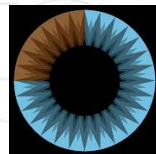
<https://cyberlearn.hes-so.ch/course/view.php?id=18233>

Code: ml2023



3Brown1Blue

<https://www.youtube.com/c/3blue1brown>



Machine Learning Masterclass

<https://www.youtube.com/playlist?list=PLsFuJoB0uOFWmB3VzUjbw>

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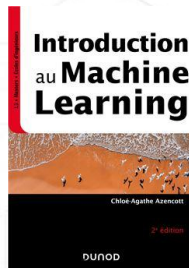
References



References

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https://cazencott.info/dotclear/public/lectures/IntroML_Azencott.pdf



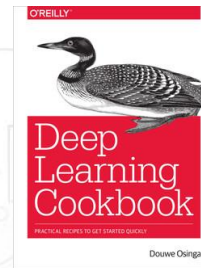
Intelligence artificielle vulgarisée

<https://www.editions-eni.fr/livre/intelligence-artificielle-vulgarisee-le-machine-learning-et-le-deep-learning-par-la-pratique-9782409020735>



Deep Learning Cookbook

<https://www.oreilly.com/library/view/deep-learning-cookbook/9781491995839/>



Introduction to Data Mining

<https://www-users.cse.umn.edu/~kumar001/dmbook/index.php>

