ECE 1508S2: Applied Deep Learning

Course Logistics

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Winter 2024

Welcome to ECE 1508!

Happy to see you in ECE 1508S2

Special Topics in Communications: Applied Deep Learning

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Instructor: Ali Bereyhi

- *Office:* BA 7208 at Bahen Centre for Information Technology
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Teaching Assistants: TBA

- *There will be tutorial lectures*

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Where and When?

- *Mondays at 3:00 PM till 5:00 PM* at **OI-G162**
- *Wednesdays at 3:00 PM till 5:00 PM* at **MS-3154**

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Sorry that we got different locations!

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Please! Feel free to ask questions on Piazza!

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Simple: we are going to learn Deep Learning!

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- *Step 1:* **Preliminaries of Machine Learning**
  - We try to get what is the problem in Machine Learning
  - We understand what Deep Learning is
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  This motivates us to get to the next step!

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- *Step 2:* **Neural Networks: FNNs, CNNs and RNNs**
  - We now get to know the details of each architecture
  - How we can implement them
  - What kind of challenges we deal with when we implement them
  - What are the standard techniques to overcome these challenges

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  This is the major part of the course. As we get over this part
  - You can consider yourself a mid-level expert in Deep Learning
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  No worries! We all get there for sure! ☺

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Checkout the course syllabus at Quercus

How Do We Get Trained?

There are three learning components in the course

- *Assignments*
- Midterm Exam
- Final Project

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  - ↳ We solve five sets of assignments
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    - ↳ Submission by deadline at 11:59 PM: full mark
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  Feel free to get help, even from ChatGPT!
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- *Midterm Exam*
  - ↳ We will have one written exam in the middle of semester
    - ↳ Questions that can be solved by hand, so no programming in the exam
    - ↳ We just evaluate our understanding of fundamental concepts
- Final Project

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    - ↳ Each group implements their solution and submits the codes
    - ↳ Each group gives a final presentation and submits a final report

Read the post on Quercus for more details

Lots of Programming in *Python*

We are going to do lots of programming in Python

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  - But our main toolkit in Python will be *PyTorch* that we learn in detail
- Don't mistake! We do not learn *based on PyTorch*!
  - We learn and implement pretty much everything from scratch
  - But, we need to know *PyTorch* as well, since it is the professional toolkit

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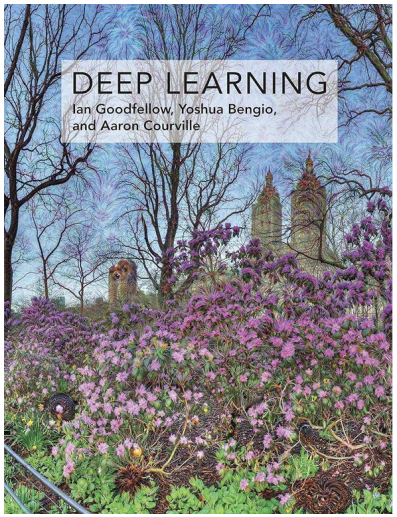
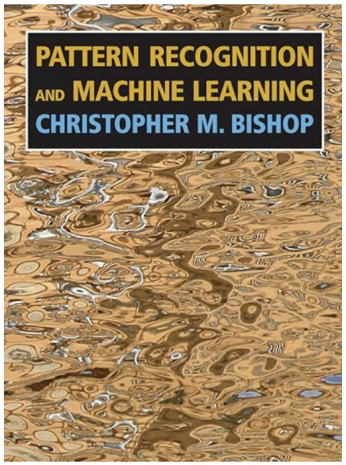
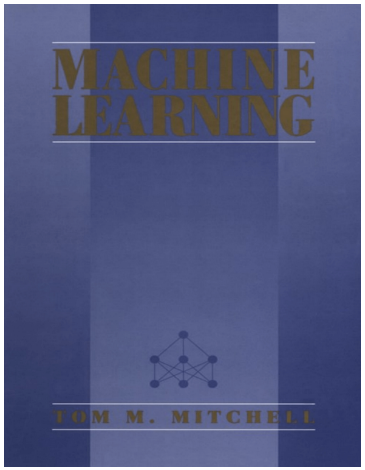
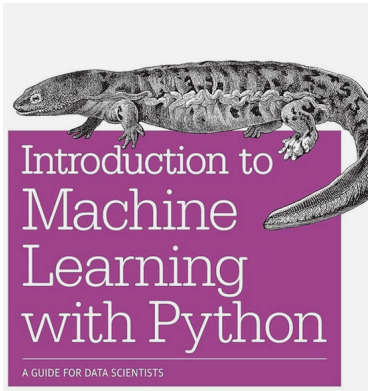
  - ↳ We are going to develop hands-on skills in Deep Learning
    - ↳ So, the two courses can be seen as the complements

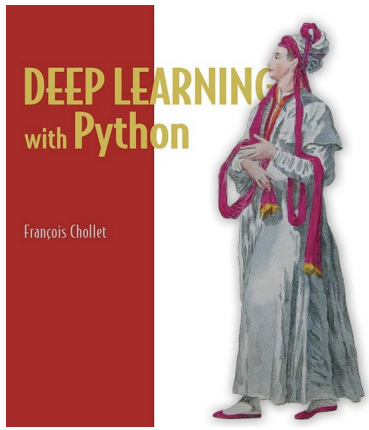
Textbooks











All materials are provided in the course. It's however good to know some texts!

- Goodfellow et al., can be accessed online at this link
- Mitchell's textbook is available online here
- For *PyTorch* the best resource is its own tutorials

Introducing Glum

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– Sure! Let's try!

So, please excuse me if I explain things sometimes in too much detail! I need to convince Glum!

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- ↳ If you don't ask; then, I need to ask!
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