To-Do's before Tuesday the 11th of May, 19:00.

To be full prepared for Monday's online session with a mentor, you should do:

1. **[MUST]** Learn all important concepts and run all lines of code in Chapter 1, Intro. *Pay special attention to the Questionnaire at the end of the Notebooks. Those questions are designed to help you with understanding of the material, and answering them confidently is proof that you have learned well. We will also bring them up during the Monday session to make sure everyone is on the same page.*

   1.1 **[Optional]** If you struggle with the content, you can utilize the video materials from the fast.ai course

2. **[MUST]** Write down an article with not less than 500 words and publish it on Medium:

   Topics for Medium articles. Choose one and confirm it with the administrator. First come, first serve.

   1. **Overview of AI techniques**. *[Add your name]*
      Neural Networks, a.k.a deep learning, is one of the approaches in machine learning and artificial intelligence techniques. Many other approaches are used today or were tried since the 1950s. Give a list and high level description of these techniques
      (This wikipedia article gives a detailed timeline incl. main techniques)
   2. **Machine Learning Techniques**. *[Add your name]*
      In our bootcamp, we will be using supervised learning techniques with fastai. What is it, and how does it work? What are the other general learning methods beside supervised learning, with their advantages, limitations and applications.
   3. **Types of Problems for ML**. *[Add your name]*
      The notebook shortly describes two types of problems to which deep learning and machine learning can be applied: Classification and Regression. Describe in more details what these archetypal problems are (incl. some applications). List other archetypal problems that can be solved.
      (This article includes a partial list)
   4. **Datasets**. *[Add your name]*
      We all know that ML only works as well as the datasets used to train the model. Give an overview of the following topics:
      - standard or reference datasets (what it is, use, examples);
      - important aspects when building our own datasets
   5. **Deep Learning "Stack".** *[Add your name]*
      In our bootcamp, we will be using a particular "stack" of SW packages/tools incl:
      - Python > PyTorch > fastai > Jupyter Notebook. (and others s.a cuda, sklearn, …)
      Each layer in the stack fulfills a purpose and relies on the layers below. Describe the main role of each layer. Give examples of other commonly used stacks.
      (This paper by Jeremy Howard may help, but this is optional)
   6. **Hardware considerations.** *[Add your name]*
      One of the enabling factors for deep learning's current success is the availability of

efficient computing hardware. Give an overview of the commonly used HW acceleration systems (tip: several 3-letter acronyms 😃) and if possible, some areas of current research to go beyond the most used systems.
(This paper may help, but this is optional)

7. **What happens in a deep learning image classifier**. *[Add your name]*
   The notebook gives a quick description of what is going on in the classifier. Read the arxiv article it refers to and give your own intuition or explanation of what is going on within the model.
   (Referred article. It is a big file, if you have difficulties to download, let us know)
8. **Computer Vision Archetypal Problems**. *[Add your name]*
   The notebook lists several archetypal problems in computer vision: classification and segmentation. There are many other types of problems to which DL can be applied. Give an overview of as many typical and generalizable problems others then classification and segmentation and describe them.
   (This article and this one are a good place to start)
9. **Model Validation**. *[Add your name]*
   The notebook introduced the concept of validating a machine learning model by using the excellent technique of validation set and testing set. Expand on this and give an overview of several techniques used to validate a model after training.
   (This article is a good start)
10. **Deep Learning Limitations**. *[Add your name]*
    The notebook refers to some of the limitations of DL, namely data, training data patterns (also called distribution), prediction vs actions, data labelling. Expand on these ideas and other limitations of DL.
    (This article is a good start)
11. **Deep learning applications beyond Computer Vision**. *[Add your name]*
    Our bootcamp will focus on computer vision as an illustration of deep learning. But there are many other domains of application, as alluded to at the end of the notebook. Give an overview of non computer vision domains where deep learning is currently applied, either in production (real business applications) or in research and provide a simple description.
12. **Supervised Machine Learning Scheme**. *[Add your name]*
    In the notebook we are exposed to the fundamental scheme of supervised machine learning: “data collection and labeling; training and validation; prediction”. Describe in more details the role of each step and the important aspects to remember.
    (The section “how computer learn” in this article is a good start, and chapter 2 in this arxiv article goes in it more rigorously)

3. **[MUST]** PPT of key concepts from Medium article. **You’ll have 5-7 minutes to present it followed by 3-5 min Q&A with your classmates and a mentor.**

   How to publish under the unpackAI publication:

   - If you do not have a Medium Account, please register and send us your Medium username as can be seen in the picture.

- Write your own article and add it to the unpackAI Medium publication (https://medium.com/unpackai). How do that is here : https://help.medium.com/hc/en-us/articles/213904978-Add-a-draft-or-post-to-publication

- **Note: Sign into our Slack: https://join.slack.com/t/unpackai/shared_invite/zt-ovg4m3qb-g3A~_lDz5nK8AKjjKW3fvg**

- Remember, we are learning together as a community so make sure to voice out your educated questions. While most confusions can be solved the quickest by simply Googling, do not hold back any questions if you have spent a fair amount researching.

We look forward to our next Tuesday session!