



# Advanced Machine Learning (FS2021): Introduction to practical assignments

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Link to website:

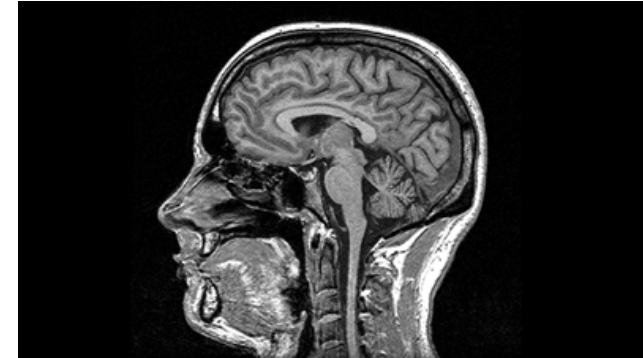
<https://aml.ise.inf.ethz.ch/>

(Only accessible within ETH network)

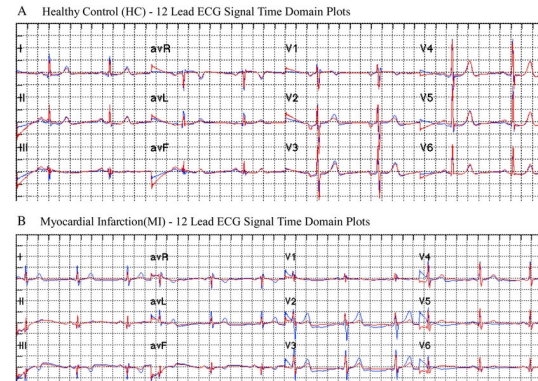
Task 0: Dummy task, excluded from grading

Task 1 - 3: Graded, based on medical data

- Task 1: Predicting age from brain MRI features

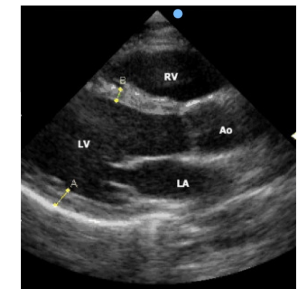
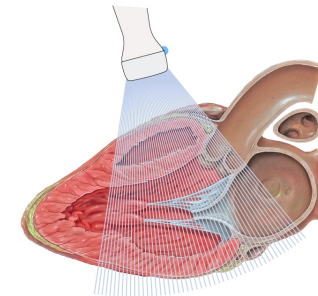


- Task 2: ECG classification



- Task 3: Ultrasound transducer position estimation

2D (two-dimensional) ultrasound





# Project rules



## PROJECT RULES

The project is a graded part of the course. You are required to adhere to the following general rules. Note that the individual tasks of the projects may specify additional rules.



### INDIVIDUAL RESPONSIBILITY

You are required to participate in and contribute to every task of the project (even when working in a group). It is your individual responsibility to hand in solutions to each task on time.



### GROUP WORK

You may work in project groups as specified in the individual task details. It is your individual responsibility to form a group among your fellow students. Once you have joined a group for an individual task, you may not leave the group (even when your groupmates drop the course). You may choose to form different groups for the different tasks.



### COLLABORATION

You are only allowed to collaborate within your group. In particular, you may not share code or provide details on how to solve the task to students outside your group. You may discuss general, non task specific questions about the contents of the lecture freely with other students.



### DEADLINES

All deadlines are strict and we do not accept late submissions. It is your individual responsibility to start with the task early enough so that you can hand in your results on time. In particular, submissions can take a substantial amount of time to run on the server and we may take the submission server offline for up to one day.

 If you do not follow the project rules, you may get zero points on the project and risk a notification due to "Dishonest conduct". 

# Group building

AML Projects Overview Task 0 **Task 1** Task 2 Task 3 Logout

## TASK 1

You are allowed to collaborate in groups on this task. Create a group to access the task.

### + CREATE GROUP

**Group name**

Please enter a group name between 3 and 15 characters. Only alphabetical characters are allowed and only the first character should be capitalized.

**Group members (nethz usernames)**

laumerf (You)



Please enter nethz usernames so that there are between 1 and 3 group members.

Create group!

### i HOW TO CREATE A GROUP

#### FIND TEAM MATES

It is your responsibility to form a group of total 1-3 students. If you struggle to find group mates, please use the functionality below.

#### + CREATE A TEMPORARY GROUP

One of the team members has to create the group and specify all his group mates.

#### ? CONFIRM GROUP COMPOSITION

All group members have to login and confirm the group composition. If any group member does not agree to the group composition, the group is disbanded and a new team has to be formed.

#### ✓ ACCESS THE TASK

Once all the group members have agreed to the group composition, the group is formed and the task can be accessed. After this point, the group cannot be altered or disbanded anymore.

### 🐦 FIND A GROUP

You may use the following twitter-like functionality to find group mates. ⚠ Do not post inappropriate messages! ⚠

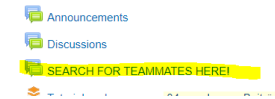
@laumerf Enter a message of up to 144 characters. Send tweet!

Be the first to tweet a message!

## ■ Use Moodle to find teammates

### 252-0535-00L Advanced Machine Learning HS2021

Dashboard / Meine Kurse / 252-0535-00L Advanced Machine Learning HS2021



## ■ Groups need to be formed for each task

# Task procedure for tasks 1, 2 and 3

## 1. Task opens

- Create groups
- Read task description and download data files

## 2. Solve task

## 3. Submit solutions

- Submit a file which holds your predictions for the **test** data (should look like sample.csv)
- Your performance then appears on a public leaderboard
- Depending on the task, your number of submissions is limited (e.g. 10/day and 100 in total)
- A submission has to be **handed-in** in order to be graded (**by every group member!**)
- When 'handing in' you have to give a brief explanation of your methods.
  - Task on overview page will turn **green** as soon as it has been handed in successfully
  - You are able to change handed-in submissions before task deadline (**time is in UTC**)

# Important points

⚠ Make sure that you properly hand in the task, otherwise you may obtain zero points for this task.

## FREQUENTLY ASKED QUESTIONS

WHICH PROGRAMMING LANGUAGE AM I SUPPOSED TO USE? WHAT TOOLS AM I ALLOWED TO USE?

You are free to choose any programming language and use any software library.

CAN YOU HELP ME SOLVE THE TASK? CAN YOU GIVE ME A HINT?

As the tasks are a graded part of the class, **we cannot help you solve them**. However, we will try to address general aspects during the project tutorials. Moreover, feel free to ask general questions about the course material during or after the exercise sessions.

CAN YOU GIVE ME A DEADLINE EXTENSION?

⚠ We can not grant deadline extensions, except in extraordinary cases (e.g. military service). However, we will require official confirmation of your problem (e.g. certificate of illness).

CAN I POST ON MOODLE AS SOON AS HAVE A QUESTION?

This is highly discouraged. Instead,

- Read the details of the task thoroughly.
- Review the frequently asked questions.
- If there is another team that solved the task, try again.
- Discuss with your team-mates.

If you still consider that you should contact the TAs, you can post a **private** question on Moodle. Remember that collaboration with other teams beyond (general discussions) is prohibited.

ARE I ALLOWED TO USE IDEAS FROM PUBLISHED PAPERS AND USE THEIR CODE?

⚠ You are allowed to search for any material that presents how to train models for related tasks (e.g. articles in conferences, repositories, etc...). However, you must re-implement the code by yourself. You are **NOT** allowed to copy code.

WHEN WILL I RECEIVE THE PRIVATE SCORES? AND THE PROJECT GRADES?

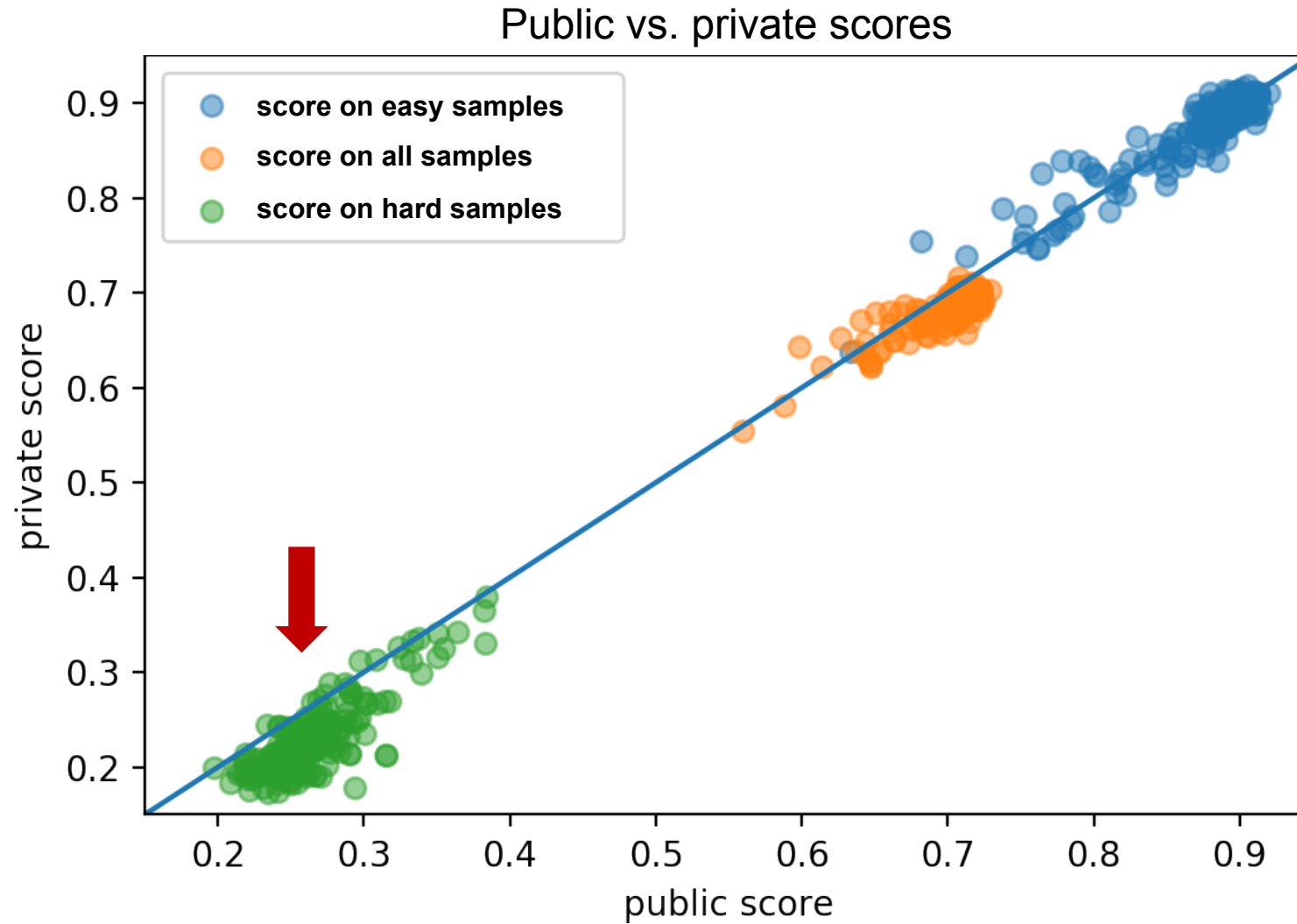
We will publish the private scores as soon as the task closes.

# Task grading

- There are two leaderboards
  - Public: visible as soon as the task opens (~50% of test-data used for ranking)
  - Private: visible after the task closes (remaining test-data used for ranking)
  - In order to take the exam, you have to pass the **passing baseline** on the **public** leaderboard of at least two tasks.
  - However, your overall-project score (which makes up 30% of your final grade) is determined **only** through the performance of your best two tasks on the **private** leaderboard.
    - Note: If you are allowed to take the exam your project grade will at least be 4.0.
- Be careful not to overfit on the test-data used for the public leaderboard
  - Do not use your public score as the sole metric for your model's performance
  - Use cross-validation and/or other validation methods



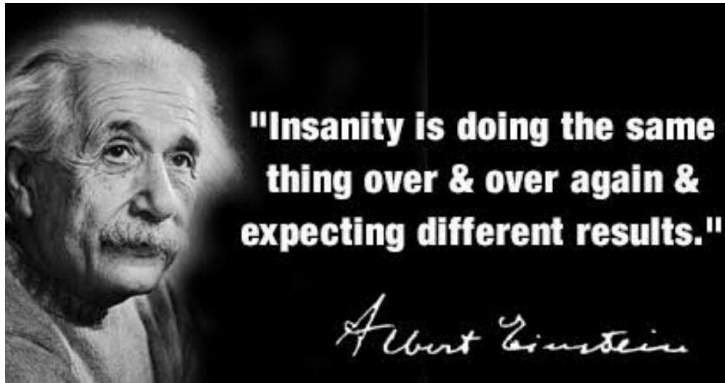
# Don't overfit to the “hard” samples on the public set!



# Live walk through

<https://aml.ise.inf.ethz.ch/>

# Questions



**\*MACHINE LEARNING:**



**How to confuse machine learning:**

