Introduction to machine learning

Timeline and Grading:

Deadlines:
- 1 or 2 or 3 lab: end of March
- project: end of May

During first few laboratory classes I will introduce three tasks:

- **1 Preliminary problems** (training simple perceptron model):
- **2 MNIST dataset with PyTorch** (advanced neural network architectures),
- **3 ECG classifier** (introduction to **scikit-learn** library).

Respective Colab-jupyter notebooks can be found on this repository:
jarek-pawlowski.github.io/MLA2025

Task to be done:

- Solve one of the three above-mentioned tasks, if you are not experienced then start with notebook **1** (preliminary problems), then present the solution during lab classes.
- Next decide whether you want to learn how to build and train neural networks (deep-learning) or maybe you prefer traditional classifiers (more immersed in statistics) and then, based on either Notebook **2** or Notebook **3**, adapt it to **your project** by choosing your preferred dataset and finetune a classifier or network architecture specifically for your application. Example datasets and projects can be found here: https://jarek-pawlowski.github.io/MLA2025/seminar_project_topics.pdf

The **final grade** is the grade for the project (subject to prior solution of problem 1 or 2 or 3), evaluated will be: the degree of complexity of the project, the time invested and the way to present the results – a mini-report and/or documentation of the developed code will be required.