

Computer Vision and Sensor Fusion 2026

Assignment 1 2026 – Multiclass classification

This assignment aims to solve a practical problem in Deep Learning using multiclass classification.



Goal: Using PyTorch, without AI tools, build a CNN model for multiclass classification. The model uses data augmentation as well. You will be able to build two CNN one with 2 layers and one with three layers.

The project must be conducted in **alone**.

Tools: PyTorch, matplotlib and sklearn. Look at the instruction folder “Getting Started” to install all necessary packages and the environment.

Dataset: The dataset is composed by 1130 images in total, divided into 10 classes. You can download the images from this link <https://www.kaggle.com/datasets/pkdarabi/bone-break-classification-image-dataset> . Moreover you can find it in my seafile as well: <https://seafile.utu.fi/d/cd535e8db4024020b474/>

Tasks: There is a Jupyter notebook template “Assignment_1_template.ipynb” with instructions that you need to follow to tackle this lab. You need to follow the instructions into that file.

Instruction for Submissions: You must convert your notebook to a PDF file and then submit the

PDF file to Moodle. There are two ways for converting a notebook to PDF:

- Install PyPDF2 by running `pip install PyPDF2`
- you can manually convert the jupyter notebook to HTML (File -> Download as -> HTML (.html)), save the HTML page as a PDF

Important:

- Please make sure that the submitted notebook has been run and the cell outputs are visible.
- The description of each task should be added into the notebook as a comment in order to make your code easier for understanding.

Assignment Evaluation: The notebook is evaluated on 0-10 points scale (0 means that the work is rejected).