

Computer Vision Term Project

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1 Introduction

In this term project, you will develop an automatic fracture classification system. The baseline is an article by Sahin, obtaining a 0.88 accuracy on 10-fold cross-validation. The article is uploaded to Webonline.

2 Dataset

The dataset link resides at the end of the article. It is a binary classification dataset containing folders **Fracture** and **Normal**.

3 Requirements

Your code will be executed on Google Colab Pro. You may work on your local machines but it is highly recommended to test your code on Google Colab environment (any additional library installation other than the Colab default environment is prohibited). Your folder structure must be as follows: **data** (main folder, on the same level with **sample_data** of Colab), **data//fracture** (must contain fracture images), and **data//normal** (must contain normal category images). Please have a look at the Figure 1 for the necessary structure. You may work as a team (up to 4 people).

- Do not forget to write the team members ID and name information at the beginning of your source.
- Save your work as a **.py** file and upload it to Webonline. Any .zip, .pdf, .docx, or even .ipynb formats will get 0 grade.
- From each team, an upload from only one person is sufficient. Do not produce duplicates.

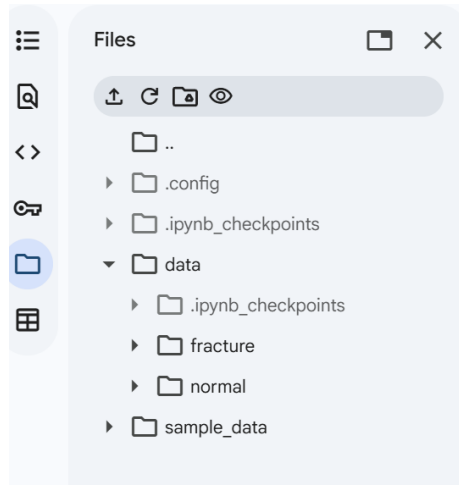


Figure 1: Folder Structure

- Follow the data formation ('data' folder on the same level with 'sample_data') strictly. Any other rearrangement will get a 0 grade without feedback. During the development, you may work through Google Drive to save time but your submission should follow the aforementioned template.
- Do not install additional packages. Libraries are limited to the Colab's collection.
- Your final measurement must include a 10-fold cross-validation.
- Make research on the current state-of-the-art methods in Computer Vision. Apart from the Colab restrictions, you are not restricted to the content you learn from the course. Pretrained models are allowed.
- You may use ChatGPT or other LLMs but if you do it, kindly include your prompts as comments in your source file.
- To get the full grade (15 pts), you must obtain a 10-fold cross-validation mean accuracy higher than 0.95. If the accuracy is between 0.85 and 0.95, you will get 10 points. If it is below 0.85, you will get 5 points. Do not deliver an empty submission.
- Feature Selection via the usage of all data is prohibited due to data leakage.
- Any other data splitting methods such as train-test split with ratio 0.2/0.3 will get 0 grade. Be careful. Do not break the rules.