Deep Learning Folder (Four notebooks):

1. (Patients-Preprocessing, Patients Preprocessing, and Tumors-Preprocessing) Notebooks :

- Importing necessary libraries and loading data
- Hounsfield Units which is a measure of radiodensity.
- Normalization A commonly used set of thresholds to normalize is -200 and 500.
- Resampling to certain isotropic resolution.
- Saving preprocessed patients offline.

2. Training Notebook:

- After getting the data processed with the above steps, we will resize data, then we are going to split data to training, testing, and validation.
- Evaluation for the model to see its structure then run it on our data. save the best results, and make some visualizations.

Image Processing NoteBook:

- Importing necessary libraries and loading data
- Hounsfield Units
- Continue processing and cropping patients slices
- Histogram Equalization for enhancing patients slices.
- The threshold to differentiate between background and foreground.
- Morphological operation by making eroding to get liver part.
- Contours: to get the largest object which is the liver.
- Make the mask: to return the original size shape.
- Segment liver to segment the liver from the original slice of the patient.
- Using SLIC Superpixels to get tumors from liver masks.
- Score to compare outputs of liver and tumors to outputs for true liver and tumors.

Website folder:

In this folder there are 3 folders:

- **Basic app:** It has styles and HTML files, it also has a configuration for the app, models tables for patients, routes URLs, controller file which has routes functions.
- **deepmodel folder**:
  - It has static files for displaying outputs of image processing and deep learning models, also it has models for the deep model.
  - It stores Dicom of patients and uses it.
- **Media Folder**:
  - It has a Dicom folder which saves the deep learning model with the extension (.h).
- **mysite Folder:**
  - It has settings and configurations of the Django project.
- **staticfiles Folder:**
  - It contains styles for the admin dashboard.
  - It contains static images of the website home page.
- **users Folder:** It has styles and HTML files for login, register, and uploading patients, it also has a configuration for the app, models tables for custom users, controller file which has routes functions.