Extracting serial number from the meter image

For extracting the meter serial number from the meter image we can go with 2 approaches :-

1. Using computer vision technique + OCR
2. Using computer vision technique + Deep Learning model(automatic)

First Approach

The reason for going with this approach:

1. Very easy to implement
2. Contains simple block of code
3. Required less time to build and run

Using computer vision technique with OCR

Link : https://git.io/JzclK

Step 1.
Drawing bounding box(labeling) around serial number from meter image using "LabelImg" library and save it(will save in .xml).

Step 2.
After getting the XML file for all images(meter images) we need to extract the coordinate of the bounding box.

Step 3.
After getting the coordinate, we try to locate the coordinate on the respective meter image.

Step 4.
After locating the coordinates on the meter image we will crop the image(of the serial number) which is bounded by the coordinates.

Step 5.
After cropping the image(of meter serial number), we will extract the text(serial number) from a respective cropped image using Pytesseract/Easyocr.

Step 6.
After getting the meter serial number, we can create a Data Frame consist of images name with their serial numbers.

To improve this...

We should remember that the meter images clicked(through camera) should be cleared enough to see their serial number because from their we need to extract text(i.e. serial number).

Second Approach

The reason for going with this approach:

1. Faster Model
2. More Accurate Result
3. No Need of Feature Engineering
4. Can be tuned in various different ways

Using computer vision technique + OCR using Deep Learning

Step 1.
Drawing bounding box(labeling) around serial number from meter image using "LabelImg" library and save it(will save in .xml)

Step 2.
After getting the XML file for all images(meter images) we need to extract the coordinate of the bounding box.

Step 3.
After getting the coordinate, create a Data Frame with images and their coordinates.

Step 4.
After that, we will create X and y variables in which X consists of an array(of meter images) and y consists of their coordinates.

Step 5.
After that, we will create a train test split

Step 6.
After creating a train test, build a deep learning model (or with any transfer learning model like... VGG-16, VGG-19, AlexNet, InceptionResNetV2, etc) and save that model.

Step 7.
Create a pipeline for testing different images of a meter.

Step 8.
After passing different images through a pipeline, we will be able to see a bounding box around the serial number of the meter images.

Step 9.
Then we will crop the bounded box area of an image and we will extract the text(serial number) from a respective cropped image using Pytesseract/Easyocr.

Step 10.
After getting the meter serial number, we can create a Data Frame consist of images name with their serial numbers.

To improve this...

1. Provide more data to train.
2. Can try different deep learning/transfer learning model.
3. We should remember that the meter images clicked(through camera) should be cleared enough to see their serial number because it will help model learn properly