ex8

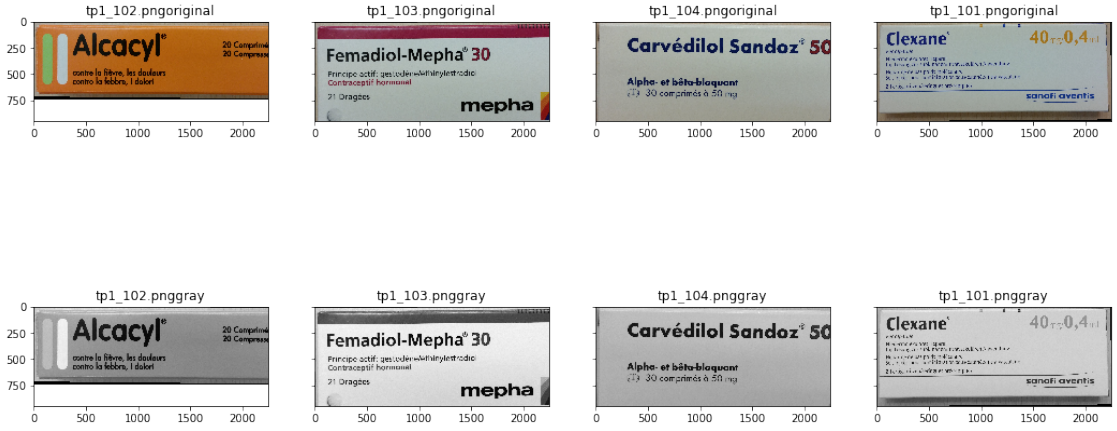
May 15, 2019

1 Exercise 8. You are given a set of 4 images: tp1 101.png - tp1 104.png. For one of these images perform the segmentation of the text information. See the example in Figure 3. Some graphical elements can be segmented as well.

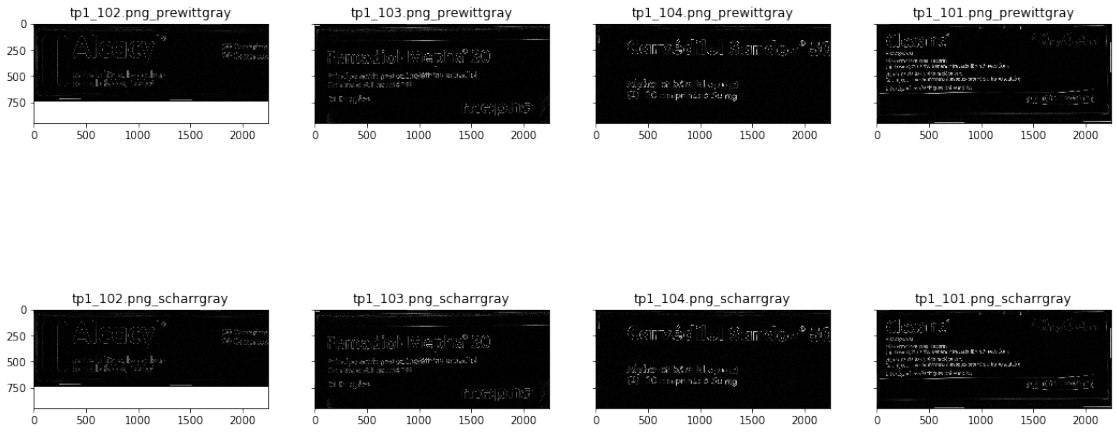
Hint: use edge detection and image filtering techniques. The next Matlab function can be useful imdilate, imfill, bwconncomp, regionprops

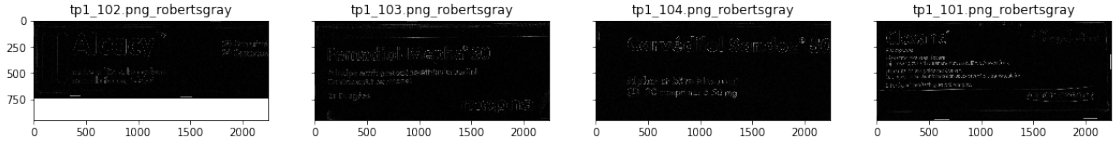
[90]:
```
import numpy as np
import cv2
import matplotlib.pyplot as plt
from skimage.filters import roberts, sobel, scharr, prewitt, gaussian
import os
import matplotlib.image as mpimg

class ImageType():
    def __init__(self, **kwargs):
        self.name = kwargs["name"]
        self.data = kwargs["data"]

def toGrayScale(img):
    return cv2.cvtColor(img, cv2.COLOR_RGB2GRAY)

def showImgs(images, title, colormap):
    fig, ax = plt.subplots(
        ncols=4,
        sharex=True,
        sharey=True,
        figsize=(18, 14)
    )

    for index, im in enumerate(images):
        ax[index].imshow(im.data, colormap)
        ax[index].set_title(im.name + title)


images = [
```

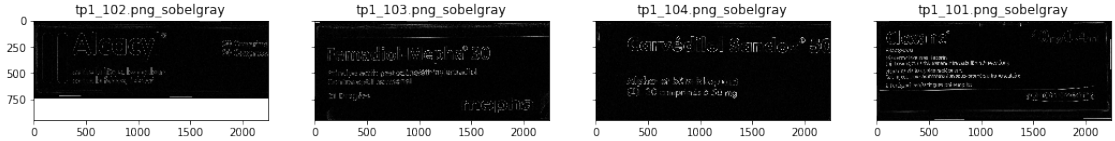
```
    ImageType(name=file, data=mpimg.imread("./data/" + file))
    for file in os.listdir("./data/") if file.startswith("tp1_")
]

images_gray = [
    ImageType(name=file, data=toGrayScale(mpimg.imread("./data/" + file)))
    for file in os.listdir("./data/") if file.startswith("tp1_")
]
showImgs(images, "original", plt.cm.Spectral)
showImgs(images_gray, "gray", "gray")
```



[99]:
```
filtered = {}
for filter in [ prewitt,scharr, roberts, sobel]:
    temp = [
        ImageType(name=im.name + "_" + filter.__name__, data=filter(im.data))
        for im in images_gray
    ]
    filtered[filter.__name__] = temp
    showImgs(temp, "gray", "gray")
```




tp1_102.png_robertsgray
tp1_103.png_robertsgray
tp1_104.png_robertsgray
tp1_101.png_robertsgray


tp1_102.png_sobelgray
tp1_103.png_sobelgray
tp1_104.png_sobelgray
tp1_101.png_sobelgray