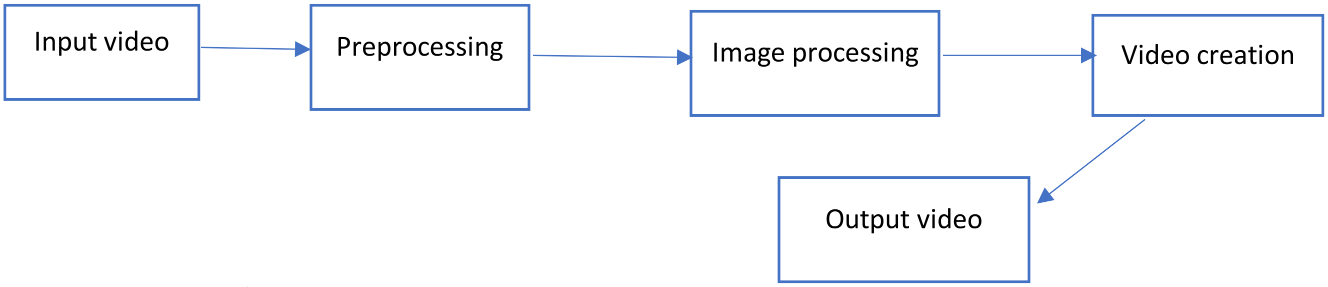
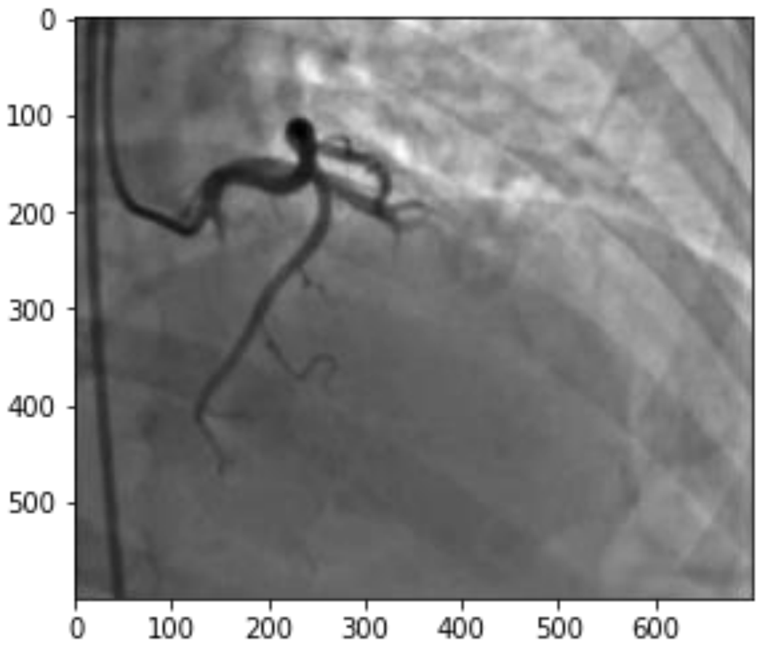
README

Objective: Segment and extract arteries in the angiogram

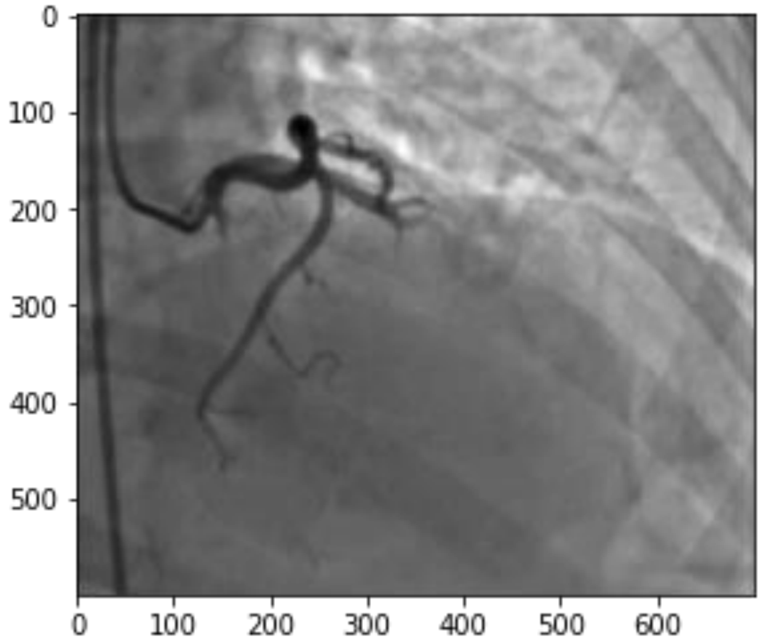
Processing pipeline:



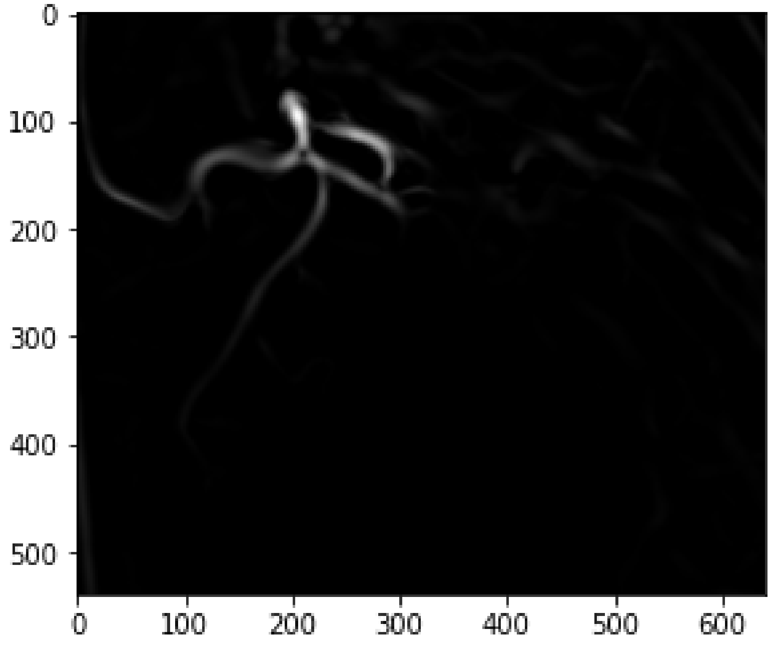
- Preprocessing:
  - Recreate the video for 21s. So, the number of frames will be 504
  - Crop each frame in order to obtain image with width=700 and height=600



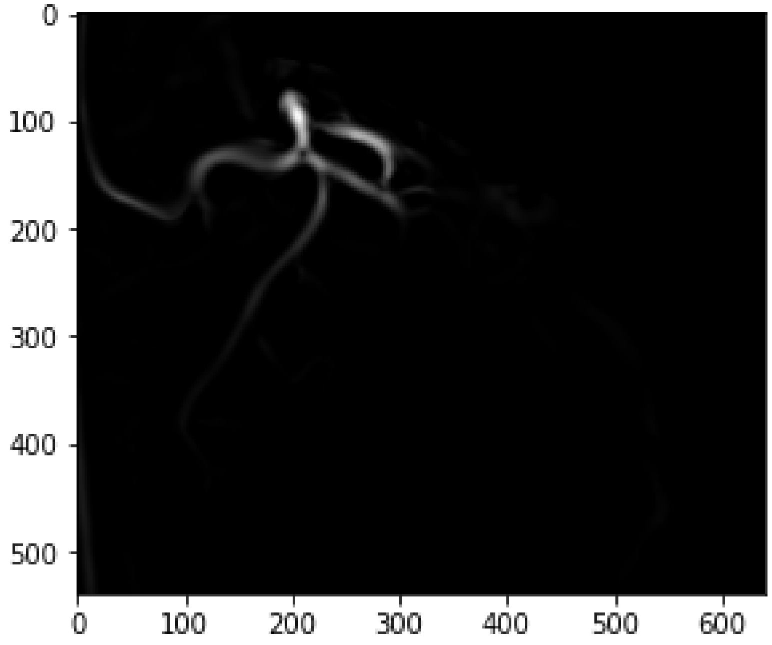
- Image processing:
  - Apply *gaussian filter* to each frame (to smooth the image)



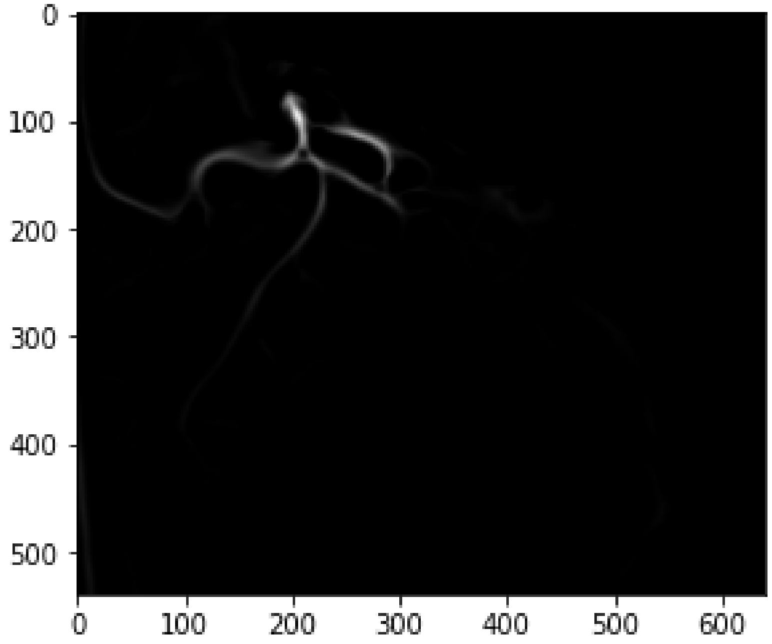
- Apply *frangi filter* and crop function (640,540) to each frame (to detect edges and remove noises)



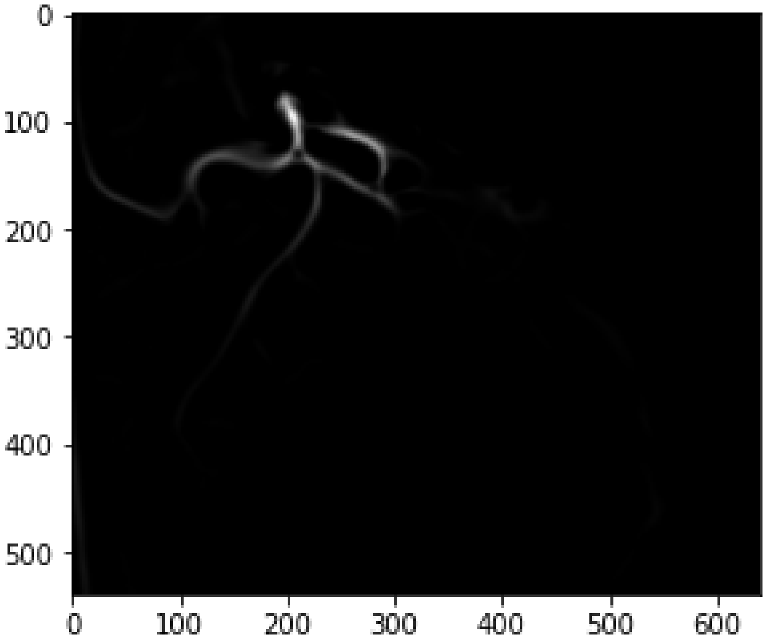
- Apply *fillPoly* and *bitwise_and* functions to remove noises from each frame



- Apply erosion with 5*5 kernel to each frame (to further remove noises from each frame)



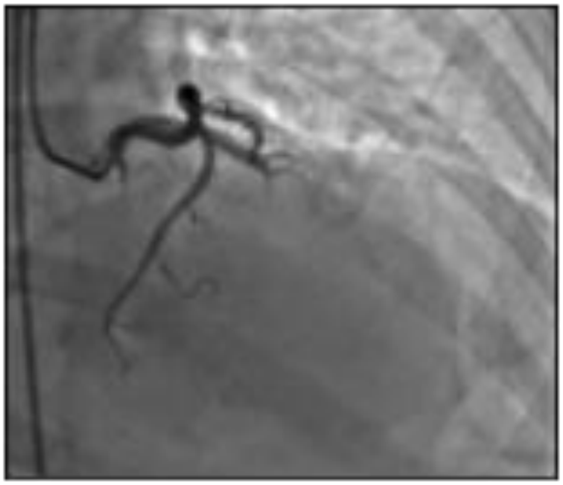
    - Again, apply *gaussian* filter to each frame (to smooth the image)



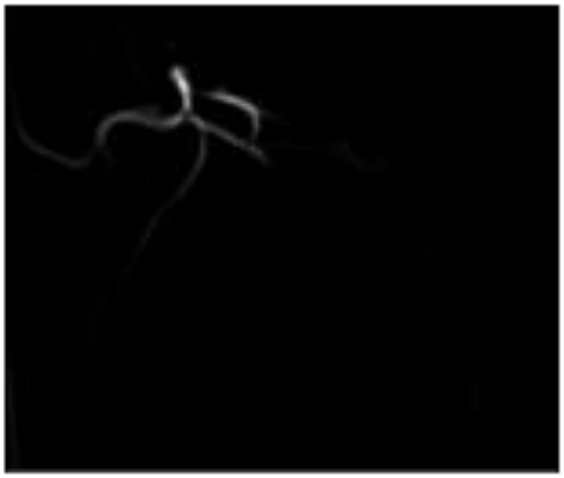
- Video creation:
    - Integrate all the frames to create the video

Evaluation:

Original input



Final output



In final output, main components of the original image can be seen

Note: Example image is taken from,

110.jpg

Run the code:

- Import the shared angiogram.mp4 to google colabs and run angiogram_vedio_processing.ipynb file

References:

- *Frangi filter*: https://scikit-image.org/docs/0.14.x/auto_examples/filters/plot_frangi.html
- *Gaussian filter*: https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_imgproc/py_filtering/py_filtering.html