4TN4 Course Project 2

AI Detection of Scratches in Old Films

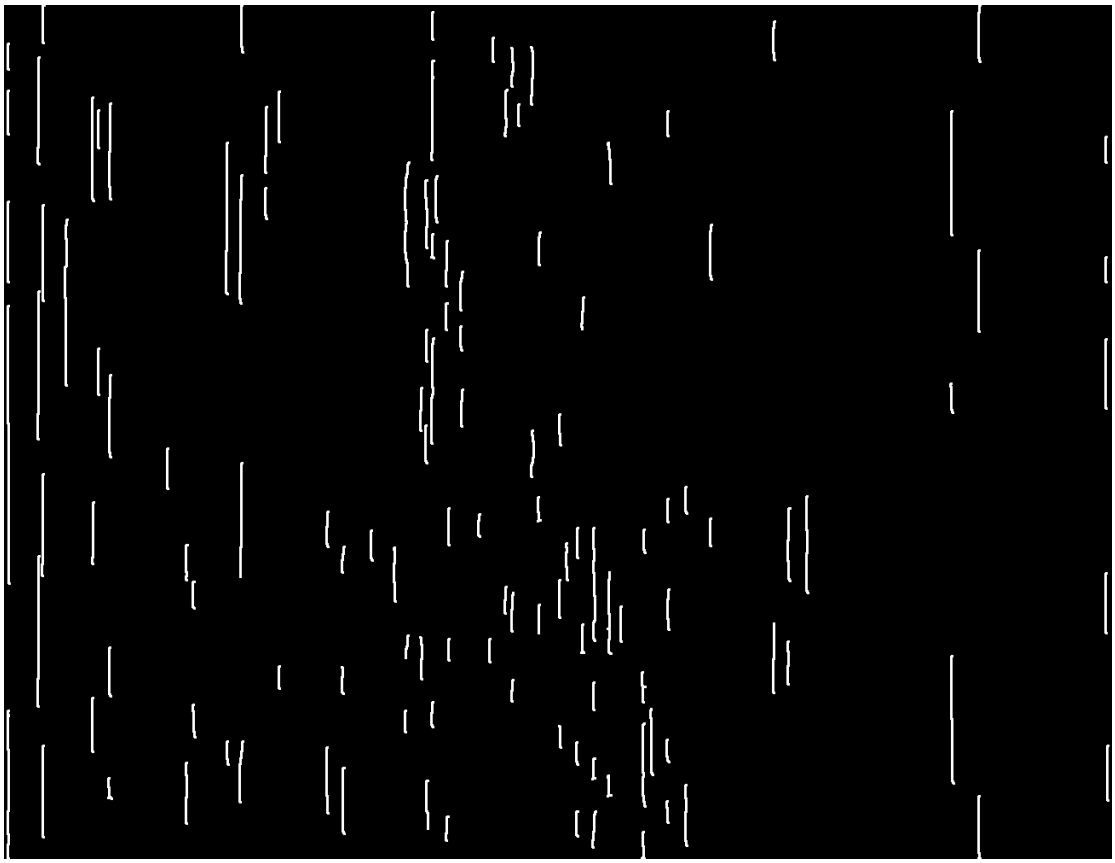
This is the continuation of Project 1. The goal of Project 2 this course project is to develop a deep learning method for detecting film scratches. The following tasks are to be performed by the same groups as in Project 1.

Task 1. Labeling of training images for supervised learning.

Each group is to use its scratch detection algorithm developed in Project 1 to screen three frames of the provided old movie for probable scratches. As your detection algorithms are not perfect, you are required to manually correct the results of your algorithm. In order not to miss any scratches, you may want to set the threshold of your detection algorithm relatively low, and manually identify and remove false alarms. This semi-automatic labeling should be done using some GUI tool either developed by you or someone else.

All groups are to label the training images as the following:

Scratched movie frame.

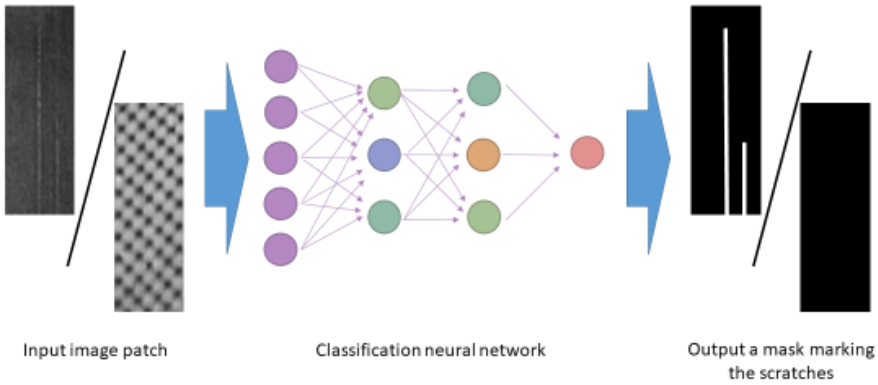


Labeled binary image (ground truth for supervised learning).

Due Date to complete labeling: March 9, 2020.

Task 2. Training of a CNN classifier and inference performance evaluation

All paired training and label images generated collectively as above will be pooled into a large training set. This training set will be used by each group to build a classification convolutional neural network to automatically detect film scratches as illustrated below.



The requirements

- A written project report to document, in detail, your CNN design, the details of the training, and the inference accuracy; in particular, do a comparative study of your traditional image processing method (Project 1) and your CNN method. You should discuss any remaining technical challenges and suggest some solution(s)/improvements.

- Submit your trained CNN model.

Due date: April 5, 2020