A THEFT DETECTION ALGORITHM USING VIDEO DATA, SPECIFICALLY FOCUSING ON SHOPLIFTING SCENARIOS.

The DCSASS dataset contains a variety of video clips categorized into different activities, including shoplifting. We will be focusing on videos labeled as "shoplifting" and "normal" to train our theft detection model.

-TUSHAR ARORA

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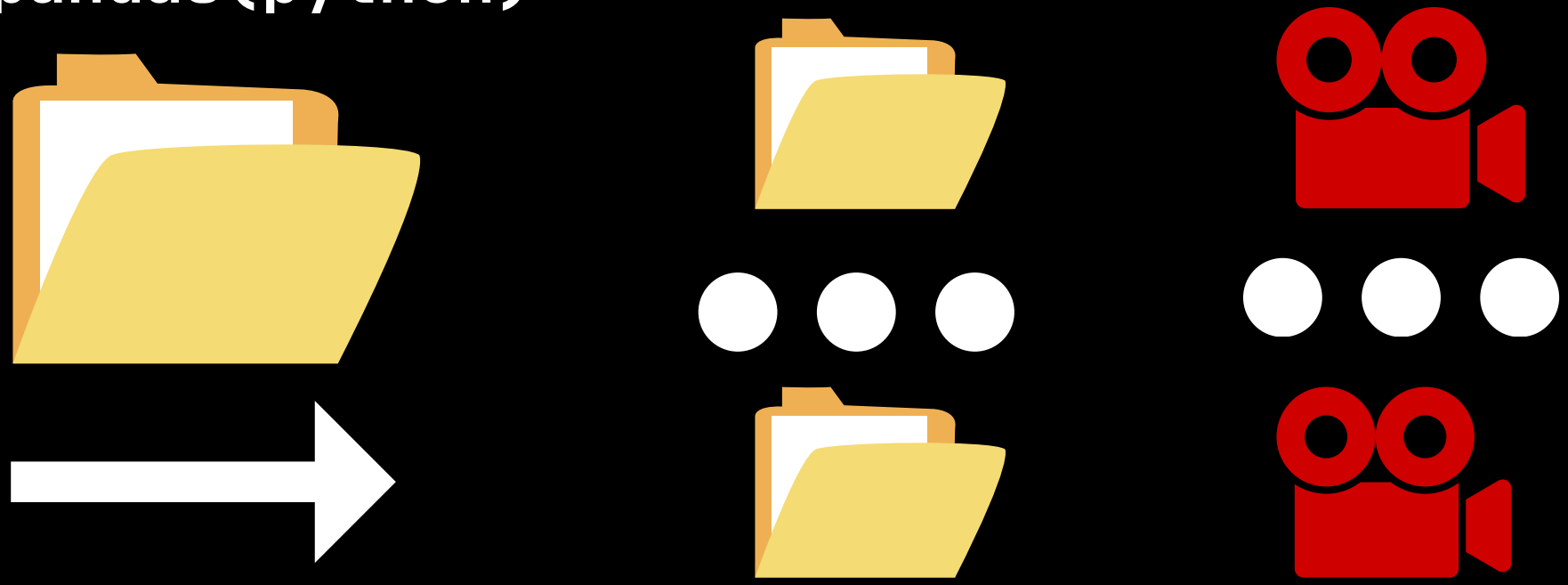
APPROACH TO SOLVE THIS PROBLEM

SHOPLIFTING Dataset looks like this & In the CSV label file, I remove the category and added header using pandas(python)



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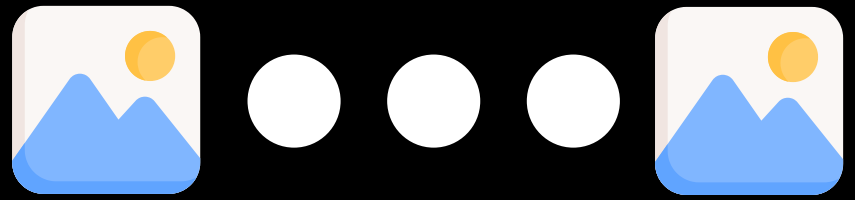
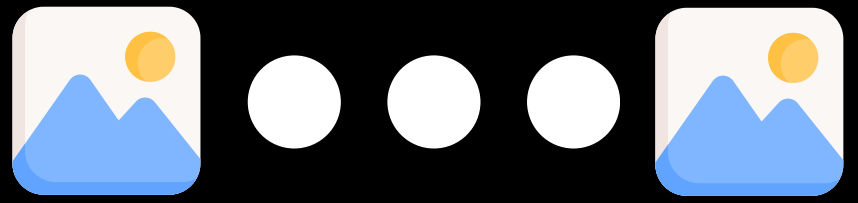
CONVERT THIS FOLDER STRUCTURE AND CONVERT VIDEO INTO FRAME USING CV2

NORMAL



SHOPLIFTING



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AFTER COMPLETING DATA PREPROCESSING.

I CAN DO HOG FEATURE ENGINEERING BUT I AM WORKING ON LOCAL SO IT TAKES TIME SO I SKIPPED BUT I WRITE CODE OF SNIPPED

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PROBLEM IS IMBALANCED DATA

NORMAL 51360 IMAGES

SHOPLIFTING 9960 IMAGES

SO I TAKE ALL IMAGES IN SHOPLIFTING & TAKE RANDOM 9960 IMAGES IN NORMAL

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MODEL TRAINING

I USED PRE TRAIN MODEL VGG16 TO TRAIN THIS & I GOT -

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Epoch 8/10
498/498 ━━━━━━━━━━━━━━━━━━━━ 1046s 2s/step - accuracy: 0.9281 - loss: 0.1914
Epoch 9/10
498/498 ━━━━━━━━━━━━━━━━━━━━ 930s 2s/step - accuracy: 0.9247 - loss: 0.1930
Epoch 10/10
498/498 ━━━━━━━━━━━━━━━━━━━━ 967s 2s/step - accuracy: 0.9362 - loss: 0.1733
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```
Accuracy: 0.9391315261044176
Precision: 0.9442388669133597
Recall: 0.9328123030379428
F1 Score: 0.9384908053265695
```

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