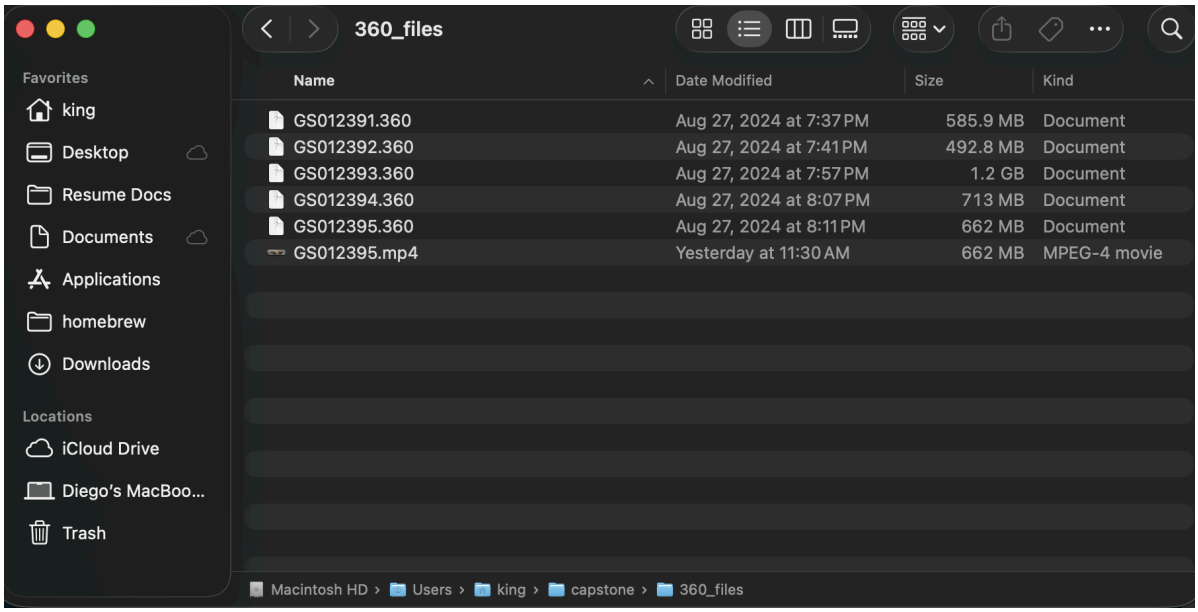
CSE485 **Diego Reyes** **Nov 3, 2025**

Work In Progress Report

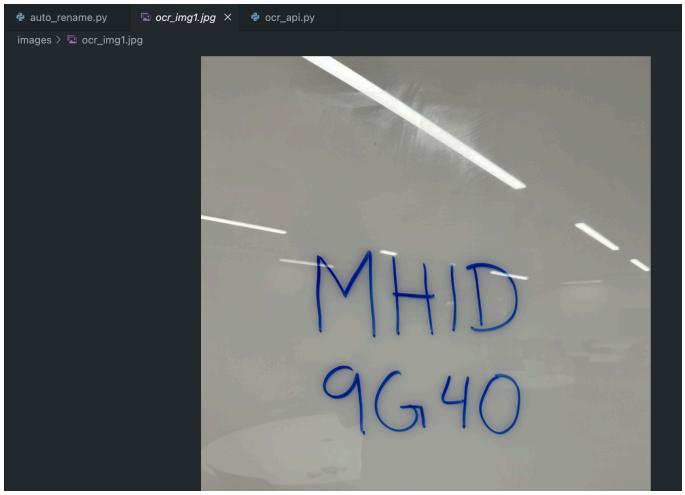
Our capstone project, Automated 360 Video to 3D Model Pipeline for Infrastructure Inspection and Visualization, involves creating a solution that automates the process of converting 360° video to a 3D model. The basis of the steps go like this: a .360 video file has a whiteboard with an ID tag written on it. This ID is meant to be used as the name for that .360 file. Our goal is to use OCR to extract that written ID in each video and rename the file. I have started the work for the renaming process. Below, I show examples of a first step in getting this process going.

Files before renaming:



This example uses GS012395.mp4 in the code as the target to be renamed.

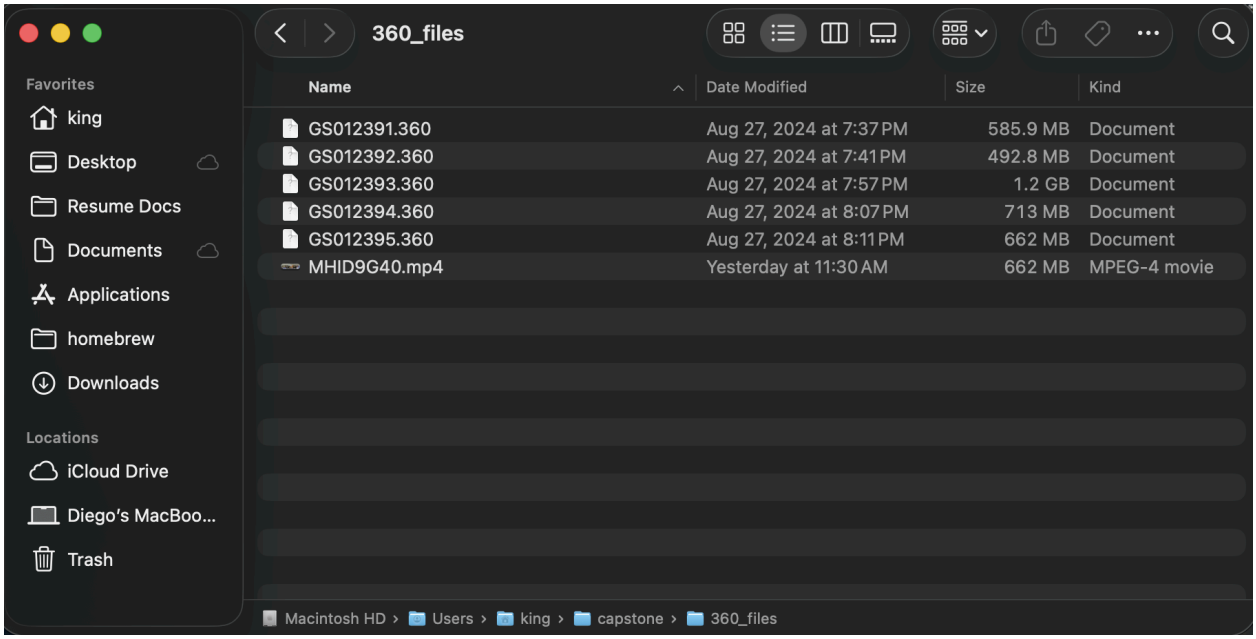
Image used for the OCR:



Output from renaming script:

```
(.venv) king@diego capstone % python f_rename.py
Running OCR on image: /Users/king/capstone/images/ocr_img1.jpg
OCR Extracted Text (raw): 'MHID
9G40'
Renaming 'GS012395.mp4' → 'MHID9G40.mp4'
Rename successful!
(.venv) king@diego capstone %
```

Files after renaming:

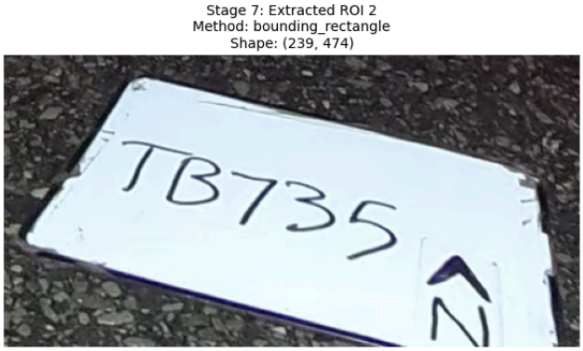


This work is still in progress. The goal is to join this script I'm working on with the script Arnav wrote that uses computer vision to detect the whiteboard from the video it's processing. This will create the pipeline for taking a video, detecting the whiteboard, sending the frame of the whiteboard for OCR processing, tag ID extraction, and then automatically renaming the file from which the whiteboard frame came from.

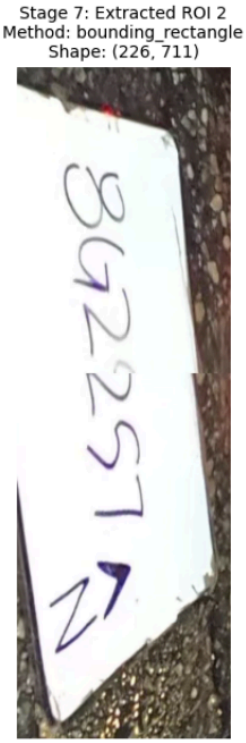
Testing Whiteboard Detection Script:

Below, I show the results of running the whiteboard-detection script on 5 sample videos provided by the sponsor. The results show that the script works quite successfully, especially given that these videos have sub-optimal conditions, like the whiteboard being laid flat on the ground. A discussion was had with the sponsor about the whiteboard being flat and how that impacts success rates, and he agreed that his team would prop the whiteboard upright in future videos. Our team is awaiting additional sample videos with this change in effect. For now, we show the results with the videos we were provided.

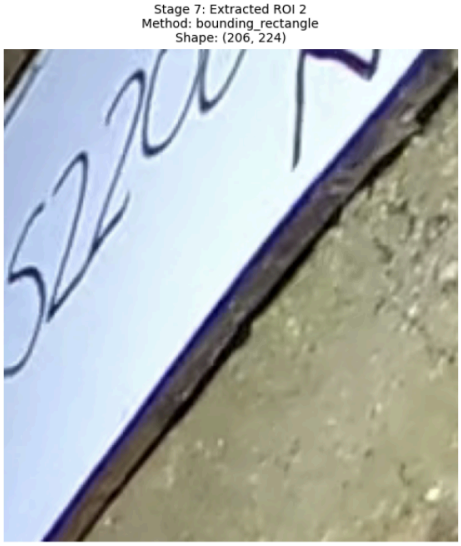
Video GS012391.360 and Results:
Frames used in the run: [2,3,4]



Video GS012392.360 and Results:
Frames used in the run: [5,6,7]

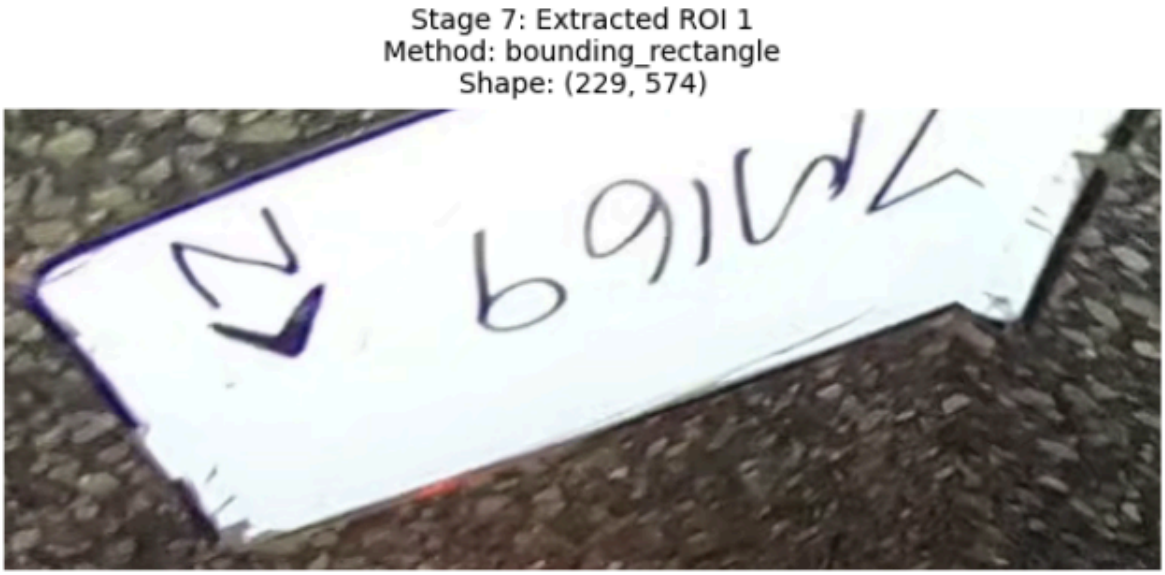


Video GS012393.360 and Results:
Frames used in the run: [5,6,7]



This was a bad video, it never fully showed the whiteboard in full view. The script pulled what it could.

Video GS012394.360 and Results:
Frames used in the run: [5,6,7]



Video GS012395.360 and Results:

Frames used in the run: [5,6,7]

Stage 7: Extracted ROI 1
Method: perspective_transform
Shape: (138, 449)