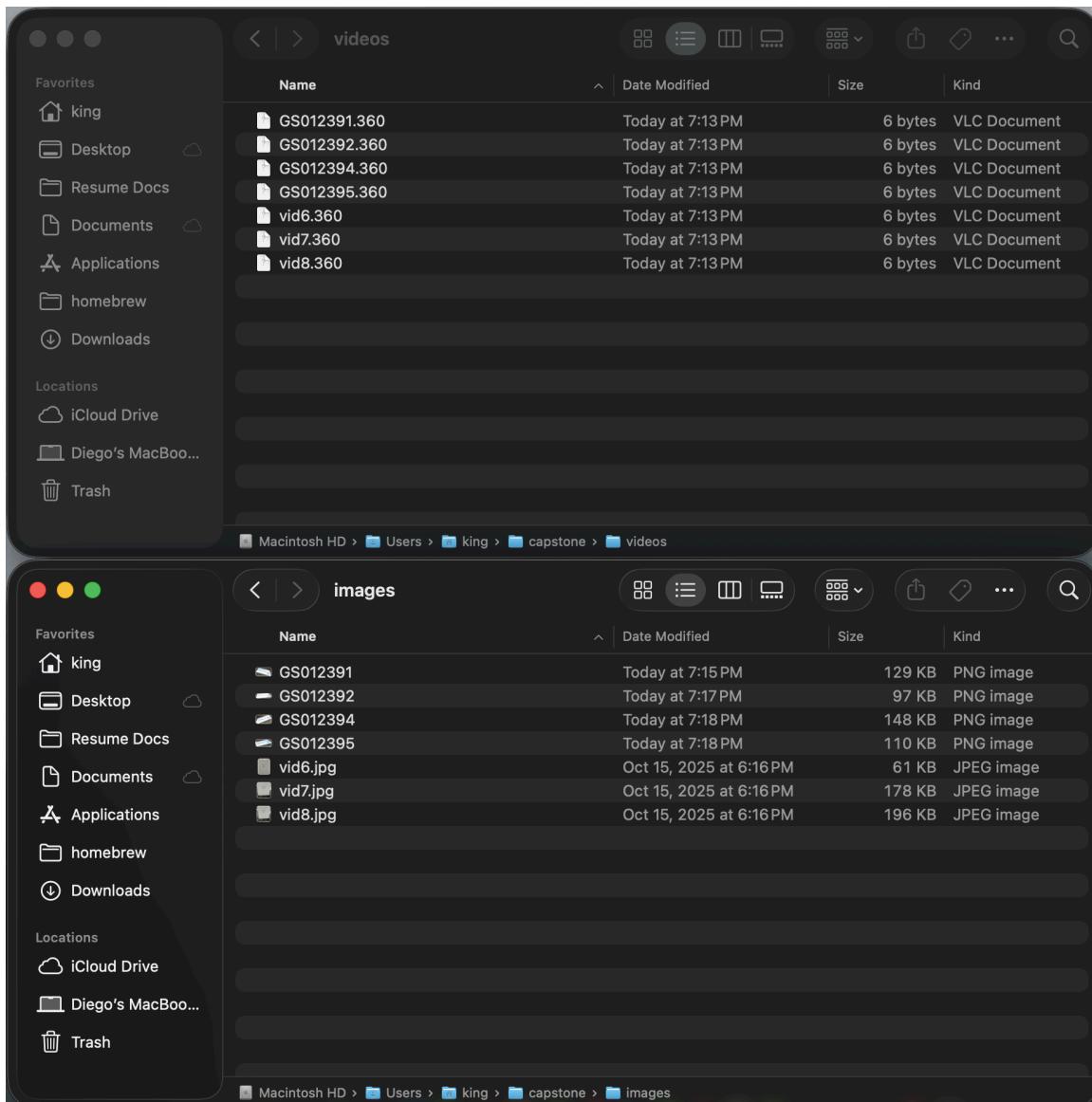


### Progress Report

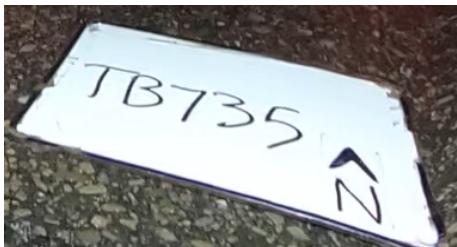
Our capstone project, Automated 360 Video to 3D Model Pipeline for Infrastructure Inspection and Visualization, involves creating a solution that automates the process of converting 360° video to a 3D model. The process starts by taking a list of video files in a directory, getting ready to process these files. Each video should contain a whiteboard with an ID tag written on it. This ID is meant to be used as the name for that video file. The solution is to extract the image of that whiteboard and store it in an image directory. After this, those image files, named after the original video file name from which it was pulled from, are processed using OCR to extract the ID written on the whiteboard. Once the IDs are collected, the file renaming occurs. Below, I show a working example of this OCR and file-renaming pipeline.

#### Files before renaming:

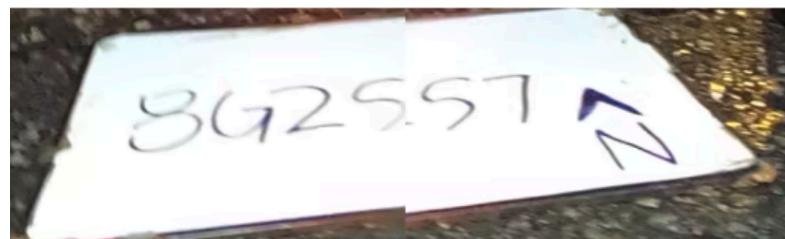


**Images used for the OCR:**

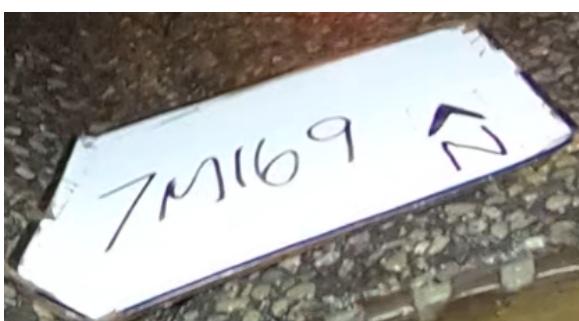
**GS012391**



**GS012392**



**GS012394**



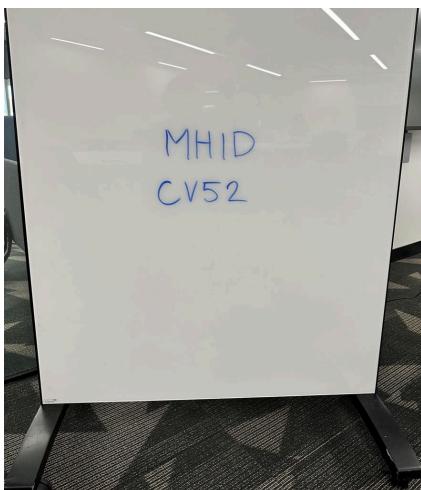
**GS012395**



**vid6**



**vid7**



**vid8**



These whiteboards are meant to simulate the extracted whiteboards from the videos. The first 4 are actual extracted whiteboards from 360° videos. Although these were extracted manually, there is a script to automate this; it's currently being refined. The last 3 whiteboard images are used for the simulated process.

## The script results for the OCR file-renaming pipeline:

```
king@diego:~/capstone
king@diego ~ cd capstone
king@diego ~/capstone python ocr-rename_pipeline.py
Added all files at /Users/king/capstone/videos to processing queue.
Processing vid7.360
Processing vid6.360
Processing vid8.360
Processing GS012392.360
Processing GS012391.360
Processing GS012395.360
Processing GS012394.360
Running OCR on image: /Users/king/capstone/images/GS012394.png
OCR Extracted Text (raw): ''
Running OCR on image: /Users/king/capstone/images/GS012395.png
OCR Extracted Text (raw): 'M 160.'
Running OCR on image: /Users/king/capstone/images/GS012392.png
OCR Extracted Text (raw): '3425.57'
Running OCR on image: /Users/king/capstone/images/GS012391.png
OCR Extracted Text (raw): 'BT735'
Running OCR on image: /Users/king/capstone/images/vid8.jpg
OCR Extracted Text (raw): 'MHID
R431'
Running OCR on image: /Users/king/capstone/images/vid6.jpg
OCR Extracted Text (raw): 'MHID
9G40'
Running OCR on image: /Users/king/capstone/images/vid7.jpg
OCR Extracted Text (raw): 'MHID
CV52'

Match found:
  Image Stem: vid7
  Video:      vid7.360
  New Tag:    MHIDCV52
Renaming 'vid7.360' → 'MHIDCV52.360'
Rename successful!

Match found:
  Image Stem: vid6
  Video:      vid6.360
  New Tag:    MHID9G40
Renaming 'vid6.360' → 'MHID9G40.360'
Rename successful!

Match found:
  Image Stem: vid8
  Video:      vid8.360
  New Tag:    MHIDR431
Renaming 'vid8.360' → 'MHIDR431.360'
Rename successful!

Match found:
  Image Stem: GS012392
  Video:      GS012392.360
  New Tag:    3425.57
Renaming 'GS012392.360' → '3425.57.360'
```

## Continued:

```
king@diego:~/capstone
```

Match found:  
Image Stem: vid7  
Video: vid7.360  
New Tag: MHIDCV52  
Renaming 'vid7.360' → 'MHIDCV52.360'  
Rename successful!

Match found:  
Image Stem: vid6  
Video: vid6.360  
New Tag: MHID9G40  
Renaming 'vid6.360' → 'MHID9G40.360'  
Rename successful!

Match found:  
Image Stem: vid8  
Video: vid8.360  
New Tag: MHIDR431  
Renaming 'vid8.360' → 'MHIDR431.360'  
Rename successful!

Match found:  
Image Stem: GS012392  
Video: GS012392.360  
New Tag: 3425.57  
Renaming 'GS012392.360' → '3425.57.360'  
Rename successful!

Match found:  
Image Stem: GS012391  
Video: GS012391.360  
New Tag: TB735  
Renaming 'GS012391.360' → 'TB735.360'  
Rename successful!

Match found:  
Image Stem: GS012395  
Video: GS012395.360  
New Tag: 7M\_160  
Renaming 'GS012395.360' → '7M\_160.360'  
Rename successful!

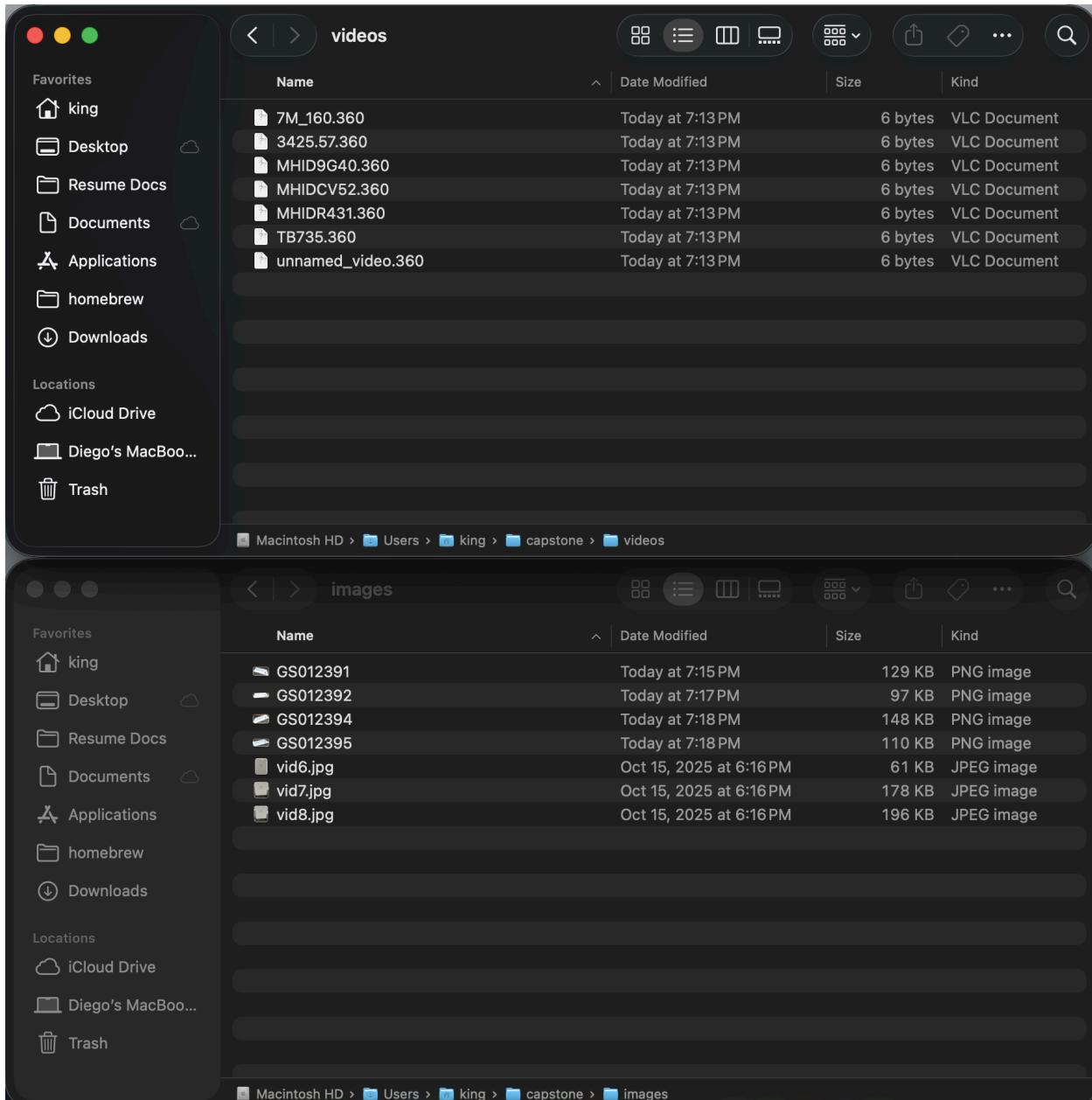
Match found:  
Image Stem: GS012394  
Video: GS012394.360  
New Tag: unnamed\_video  
Renaming 'GS012394.360' → 'unnamed\_video.360'  
Rename successful!

Pipeline complete.  
OCR-Rename pipeline completed

```
~/capstone king@diego ~ 13s king@diego
```

A screenshot of a Mac OS desktop showing a terminal window with a command-line session. The terminal has a decorative Christmas light border at the top and bottom. The session details file renaming operations, including matches for stems like 'vid7', 'vid6', 'vid8', 'GS012392', 'GS012391', 'GS012395', 'GS012394', and 'unnamed\_video'. It shows successful renamings to tags such as 'MHIDCV52', 'MHID9G40', 'MHIDR431', '3425.57', 'TB735', '7M\_160', and 'unnamed\_video'. The session concludes with a 'Pipeline complete.' message and ends with the command 'OCR-Rename pipeline completed'. The Mac OS Dock is visible at the bottom, featuring various application icons.

## Files after renaming:



Further refinements are in progress. The team will add logic that creates a monitoring functionality - the process will be able to be run once or run as a background process, where it will monitor the working directory for new video files, and begin the pipeline once it detects unprocessed videos. Furthermore, the team is working on the final components to integrate an accurate whiteboard detection and capture to image, which will be called within this pipeline outlined here. Thank you for reading.