CprE 492 - sdmay20-13

Detection and classification of cracks on transportation infrastructure using UAV based aerial imagery

February 2nd - February 8th

Team Members

- Ian Seal - Reporting Lead
- Lauren Arner - Project Manager
- Madi Jacobson - Data Lead
- Ben Ferreira - Testing Lead
- John Schnoebelen - Software Developer
- Jack Temple - Software Developer

Past Week Accomplishments

- UI Development - John and Ben
    - Began work on simple UI for client to use
    - Decided to use PyQt5 as the Python framework for our GUI
    - Created a test UI script that can import Python scripts as modules to access
- Data Analysis - Lauren and Madi
    - Created the accuracy equation
    - Discussed the process for manually verifying images
        - Each verify half and switch to ensure each image is looked at twice
        - Defined “when” accuracy would be tested
    - Begin accuracy verification process for current algorithm state
- Detecting grass from images - Jack and Ian
    - Researched ways to remove grass from images so it won’t be detected as cracks
    - Decided to mark image as uncracked if average color is green
    - Began implementation of this solution

Pending issues (If applicable: Were there any unexpected complications? Please elaborate.)

Individual Contributions

Team Member	Individual Contributions	Hours this sprint	Total Hours
Ben Ferreira	PyQt5 Tutorials, working on importing code as modules, created test script/UI	6	14
John Schnoebelen	PyQt5 Tutorials, Upload Images with File Explorer, Button Layout	6	14
Lauren Arner	Accuracy process design with Madi. Worked on verifying human accuracy process for certainty and consistency.	6	14
Madison Jacobsen	Accuracy process design with Lauren. Began the process to compare human accuracy and algorithm accuracy.	6	14
Ian Seal	Detection of grass and avoiding marking it as cracks.	6	14
Jack Temple	Detection of grass and avoiding marking it as cracks.	6	14

Plans For Coming Week

- UI Development - John and Ben
    - Button press that runs command
        - Python script that detects cracks in photo(s)
    - Work on getting access to our epoch within UI
    - We will be working with Jack and Ian to get a list of functions our UI will need to run based on the current command-line commands
- Data - Madi and Lauren
    - Finalize human vs machine algorithm accuracy process
        - Verify process works with testing and (machine learning) algorithm team
        - Ensure team knows process for consistent results
    - Determine current accuracy
        - Verify the amount of cracks humans can identify using multiple images and compare to the images currently being output by algorithm.
    - Look for examples of human checked images

- Grass Detection - Jack and Ian
    - Integrate grass detection
        - Add to program the grass detection, and then ensure that it performs correct
        - The program should only exclude the square if it detects that the majority of the square is green
    - Troubleshoot concrete issues
        - During testing we noticed that there were issues with some concrete pavement images
        - We will need to try and figure out why these images are not having their cracks outlined correctly