EE/CprE/SE 491 WEEKLY REPORT 4

Week 3 – Week 4

Group number: 20-18

Project title: Development of Image Analysis Algorithms for Crack Detection Using a Smartphone

Client &/Advisor: Bo Yang/Halil Ceylan

Team Members/Role: Akira Demoss, Maggie Dalton, Modeste Kenne, Nik Thota

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○ **Weekly Summary**

This week we developed our plans for training an object detection model based on deep learning best practices outlined in an online course offered by Stanford titled Convolutional Neural Networks for Visual Recognition, and techniques for augmenting our training dataset outlined by renowned machine learning engineer Andrew Ng . We cleaned the data in our dataset and fixed and relabeled the remaining data.

○ **Past week accomplishments**
- Akira
  - Developed plans for training an object detection model based on deep learning best practices outlined in an online course offered by Stanford titled Convolutional Neural Networks for Visual Recognition
  - Leveraged techniques for augmenting our training dataset outlined by renowned machine learning engineer Andrew Ng .
  - Cleaned the dataset to make data more manageable.
- Maggie
  - Modified app for use in capturing data to be used for training
  - Learned how to properly label images and began labeling data

- - ○ Used modified application to capture new images of Ames roads to be used for training
  - Modeste
    - ○ Partially finished the node.js script needed for processing the images on the server. But still faced with a few issues (described below in the pending issues section)
    - ○ Labeled a couple of images from our dataset using labellemg software.
    - ○ Wrote an HTML form containing file input element which form's enctype attribute support multipart/form-data:
  - Nik
    - ○ Figured out post and get requests
    - ○ Worked on frontend for web view client

- **Pending issues**
  - Akira
    - ○ When cleaning and going through the dataset we noticed that there were not enough examples of potholes to learn the model with.
    - ○ Currently we need to manually relabel each of the labels, it will be faster if we can find or create a script that does this automatically
  - Modeste
    - ○ After retrieving the images that had to be labeled from our dataset, I wasn't able to properly label them because their format was not supported by the software that I was using.
  - Nik
    - ○ Having some issues with posting new login information

- **Individual contributions**

Name	Individual Contributions	Hours this week	Hours Cumulative
Akira Demoss	Developed plain for training, validation and testing an object detection model based on deep learning best practices, cleaned our training dataset using knowledge outlined in Andrew Ng's book Machine Learning Yearning	14	26
Maggie Dalton	Modified app to be able to capture images for training. Began data collection and	8	21

	labeling.		
Modeste Kenne	Partially writing the node.js script needed for processing the images on the server.	8	17
Nik Thota	Worked on web view client	7	17

- o **Plans for the upcoming week**
  - Akira
    - Finish cleaning, relabeling, and fixing the data by week 5.
    - Find a proportional amount of images from potholes to add to dataset to make up for lack of pothole data.
  - Maggie
    - Capture more images to be used in our training dataset
    - Label additional images to expand upon training dataset
  - Modeste
    - Resolve the formatting issues I'm having with the image labeling software and label all the images from our dataset that I have been assigned to do.
    - Look up more efficient ways to process the images on the server.
  - Nik
    - Finish web view client
    - Collect and label images