Milestone 4 Report

Team Deinonychus – Patrick Creighton, Luka Rogic, Christopher Lee, Juntong Luo

Current State of Project

After completing the main features of the application in Milestone 3, the focus of this milestone was integrating our rotation correction and low-light enhancement models, as well as fine tuning and polishing the application frontend. The application now has the additional “Feature Toggle” function, which allows the user to select which features they want to run. Additionally, our application design is now more intuitive for the user, with application usage instructions and a loading screen that displays when the features are running. The last steps were to discover and resolve any bugs, and organize and add documentation to the repo, enabling other programmers to run and build on our application.

Main Milestone Goals

From our proposal, the main goals for milestone 4 are: test and tweak models, connect pages together, finalize overall design, and complete the final report and presentation. An additional goal we had was to finish integrating the rotation correction model, which was completed without issue. Then, we experimented and tweaked our custom object detection model to increase its accuracy, and resolved a bug where the confidence level parameter was not used by the application. We also ran numerous integration tests, with different combinations of images and features enabled, comparing the expected tags to the actual tags. This enabled us to discover numerous small bugs, such as outdated paths and incorrect portrait/group photo category logic. Our design has been finalized, and pages connected so that users can navigate between them. More details regarding design changes can be found in the ‘Team Member Responsibilities' sections. In parallel to the final application touch ups, one member started the final report, which allowed us to complete the report and video presentation without the stress of having to meet the deadline.

Current Challenges / Next Steps

1. Preparing our application to be deployed with Google App Engine for public use.
    a. For the last milestone, we prioritized finishing up and debugging the key application features, which did not leave us time to resolve the challenges we faced when deploying our application with the newly added features. If we were to continue application development, this would be one of our top priorities.
2. Manual setup is required for the face recognition model. The next step would be to enable face selection within the application, and to display images tagged with names in non-decreasing confidence order for quicker manual corrections.
    a. We were not able to fully implement this feature for the project deadline. We have implemented the ability to edit tags, retrieve the confidence of the model’s prediction, and form model inputs from image folders (as described in the “manual setup” section of the application homepage). All that is left is to develop this feature’s frontend.

Team Member Responsibilities

Christopher

- Added manual editing of tags in the application's gallery
- Added loading screen shown while ML models process images
- Modified application to allow PNG inputs on top of the already allowed JPG inputs
- Edited presentation video

Luka

- Created new weights for the custom object detection model (bettertreedetector.pt)
- Worked on the final report

Juntong

- Connected the rotation correction model to the application
- Implemented the "Feature Toggle" in the backend
- Drew the Image Flow through application diagram
- Fixed multiple bugs
- Added README for each folder

Patrick

- Wrote application usage instructions and added the "Feature Toggle" section to the homepage
- Reorganized the buttons so they appear in a logical order and take up less space
- Repository organization, cleanup, and documentation