SaveVisions – Alcon

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Development Plan:

Features

- **Forcep Detection:** implement this algorithm to detect the forcep during the surgery and use the occurrence of forcep as a timestamp reference for operation speed measurement.
- **Eye Center Detection:** Detect the center of the eye to help the circle and roundness detection algorithm.
- **Circle Detection Algorithm:** Refine the implemented rhexis/limbus detection algorithm by examining accuracy of detected circles and stability of the outputs.
- **Roundness Detection Algorithm**: Improve the current algorithm to find the roundness for the rhexis.
- **Grading System:** Figure out how to divide the current data to different grading scales and give weights to four parameters, build the grading system.
- **Login Page Development:** Construct an authentication system for the frontend webpage.
- **Uploading Link**: Construct four upload links for the surgery video, and each upload link is responsible for one parameter.
- **Grading Display:** Display the grading of four parameters listed in the webpage front end.

Timeline

Sprint 5

- Develop front end
    - user page and login page
    - Create new user(novices and experts)
- Integrated the backend into 1-2 python files
    - Combine all the limbus & rhexis related detection together
    - Combine all the surgical instruments detection together
- Finish rhexis/limbus detection
    - Improve circle detection algorithm if possible
    - save data for diameters and centration and ready to be used

Sprint 6

- Improve algorithms and fix bugs based on the feedback from the pair group
- Improve roundness and centration algorithm
- Improve the duration algorithm
- Improve on grading system

Sprint 7

- Finish the final presentation slides
- Practice presentation
- Roundness calculation optimization
- Front end page optimization

Sprint 8

- Practice presentation
- Get the final poster done
- Debug, debug, debug
- Embellish the web page
- Test and finalize the entire program