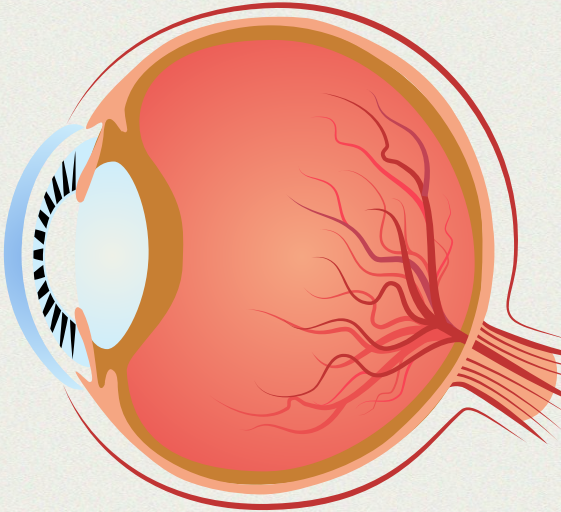
EXAMINING THE EYE in VR

Claire Chen and Luci Feinberg



WHO ARE WE WORKING WITH?

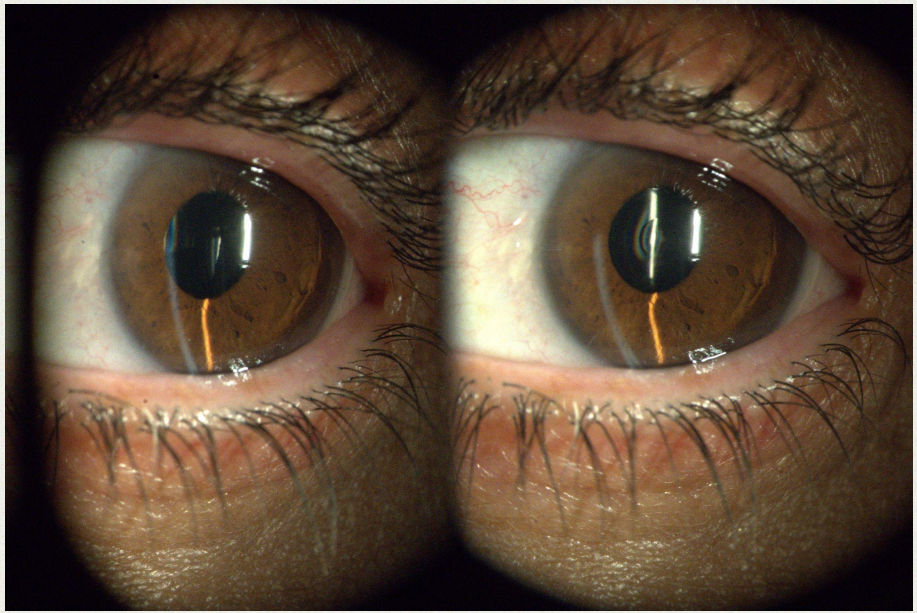
COLUMBIA
COLUMBIA UNIVERSITY
IRVING MEDICAL CENTER

Dr. Stanley Chang

Ophthalmologist at
CUIMC/Edward S.
Harkness Eye Institute

Visualization of Eye Conditions

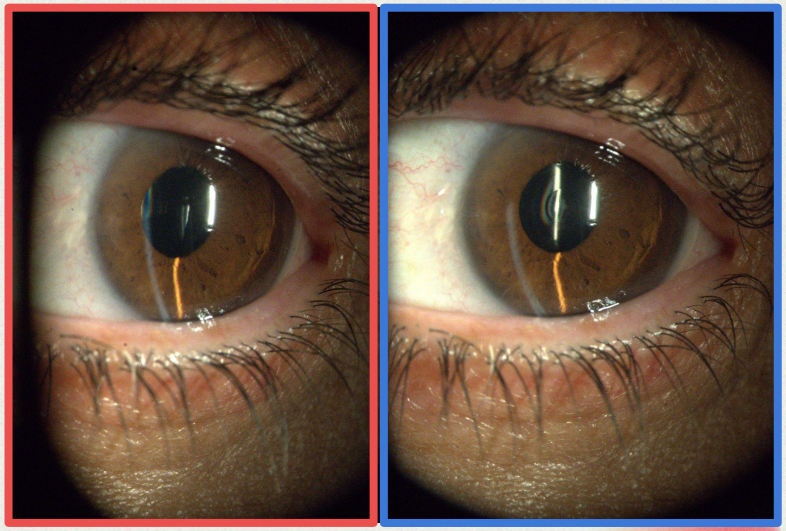
Slit Lamp Microscope (SLM)



Visualization of Eye Conditions

Doctors use a stereoscope to render stereo (3D) images through binocular vision

Left eye



Right eye

However

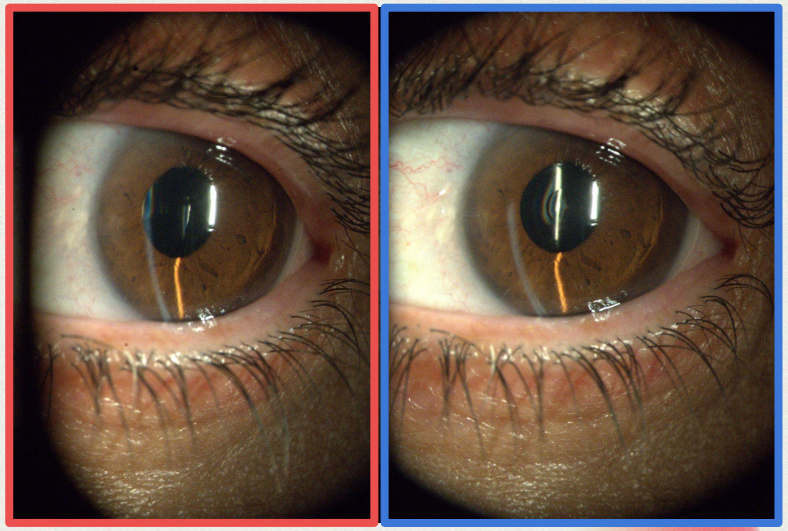
Stereoscopes are not convenient to use

- Currently, observers and students can only view the 2D images through a single ocular.
- Not desirable for remote education and telemedicine.
- Doctors can’t scale or move images freely for closer examination.
- Doctors can’t compare and contrast different images of the same eye over time.

Visualization of Eye Conditions in VR

Goal 1: Render stereo (3D) images through binocular vision in Quest 3

Left eye

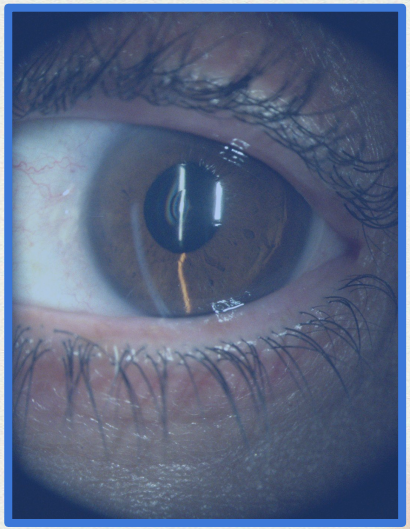


Right eye

Visualization of Eye Conditions in VR

Test: creating different layers for each eye and displaying differently colored images for each.

Left eye layer



Right eye layer

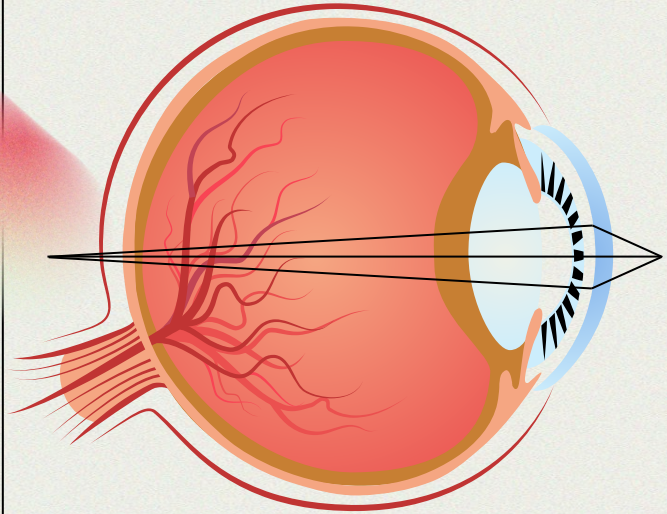
Visualization of Eye Conditions in VR

- **Milestone 1:** Rendered stereo (3D) still images in Quest 3, enabling scaling and ray grabbing

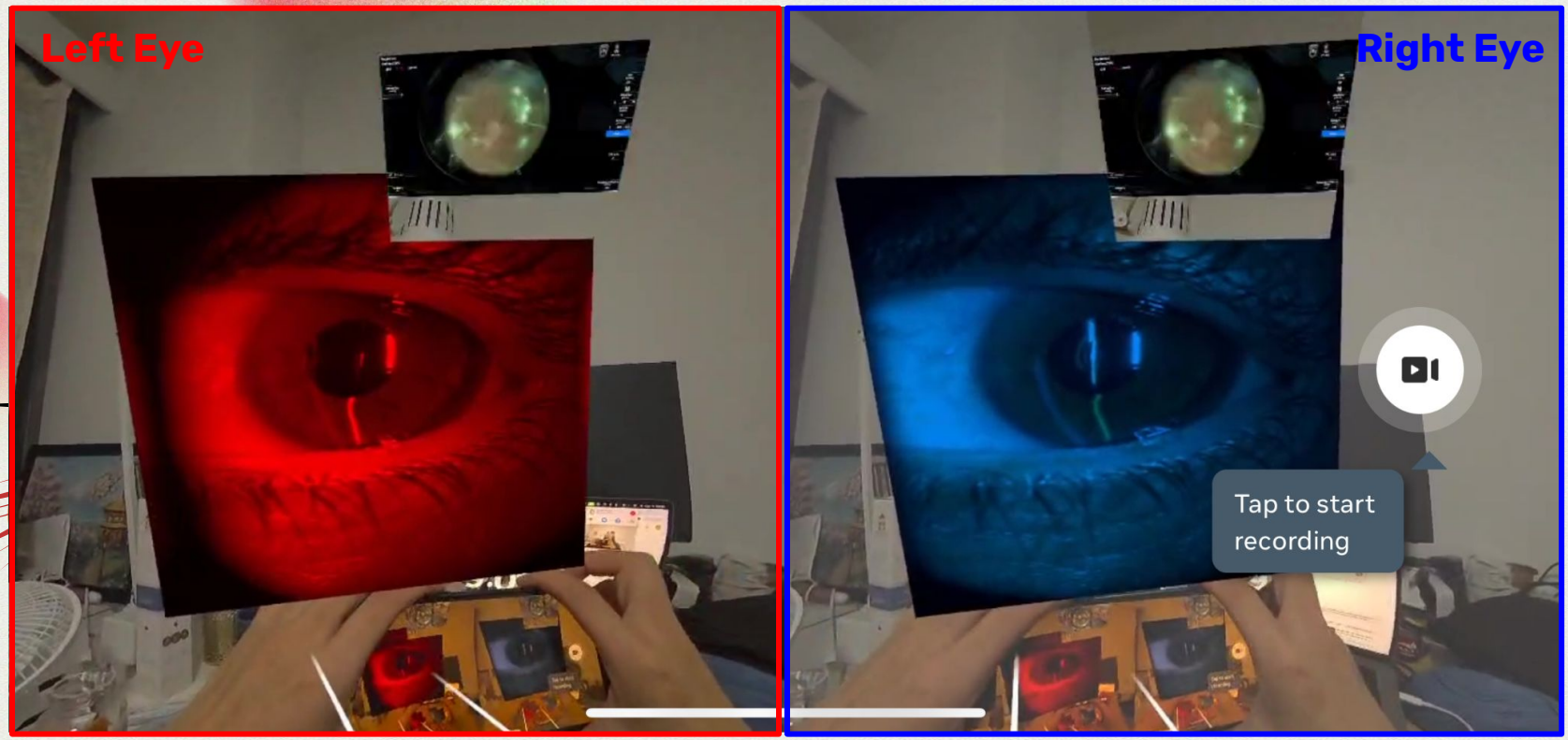

EyeAppTest

Feedback

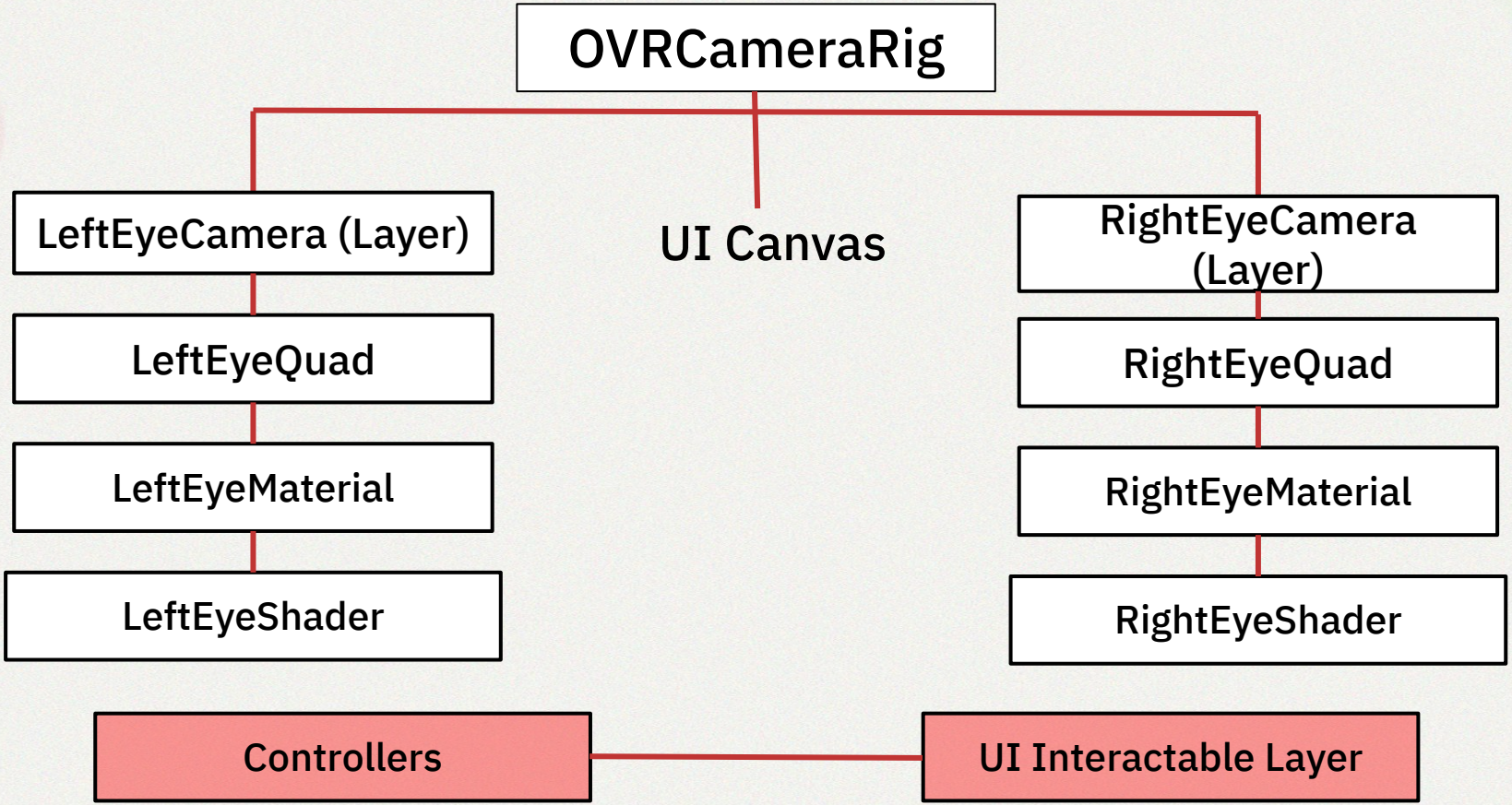
- In addition to the images, display patient information and timestamp
- A library where we can sort and select the images
- Enable the same features for stereo videos



DEMO


Left Eye
Right Eye
Tap to start recording

TECHNICAL IMPLEMENTATION



PLANS FOR THE UI

Viewer pane, only able to view 3 at a time

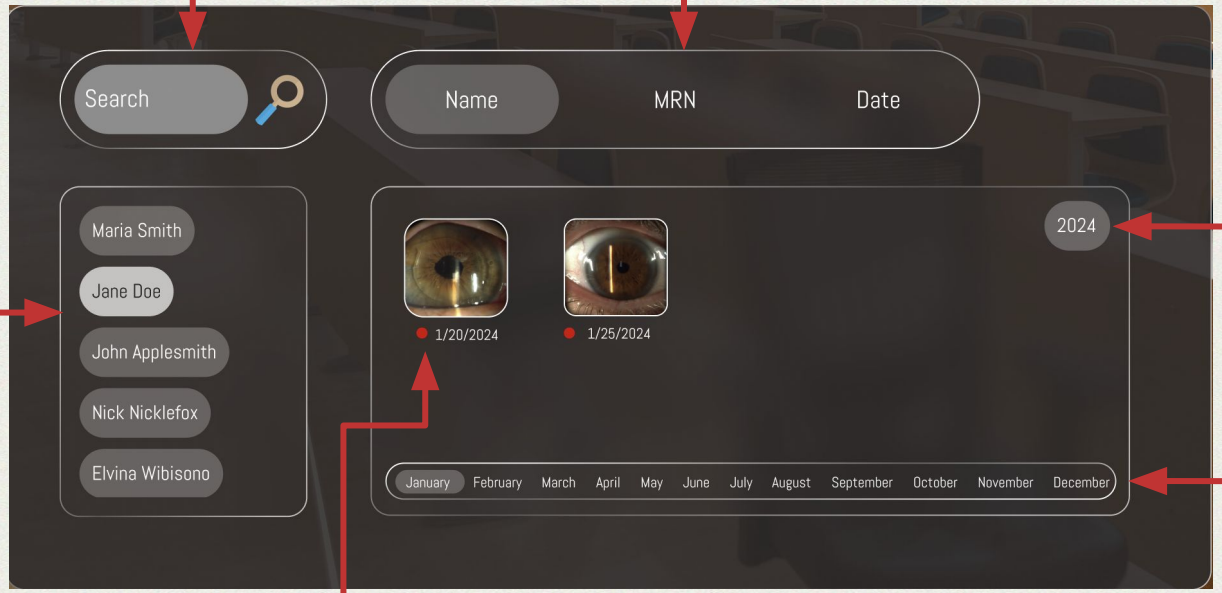
Centralized library

Viewer pane, view multiple images at a time

Centralized library

LIBRARY

Searchable fields



Name

Year

Date selection

Color-coded dots

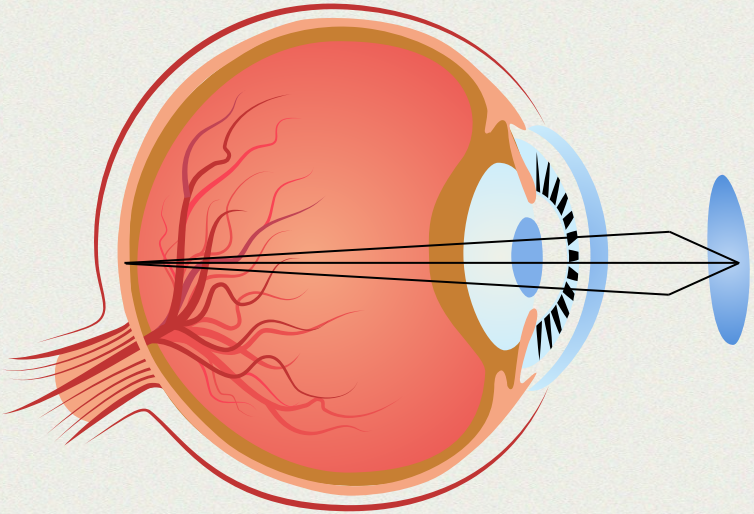
NEXT STEPS

01 Selection

02 Focus

03 Video control

04 Accessibility



THANK YOU

QUESTIONS?