Tracking of Instruments

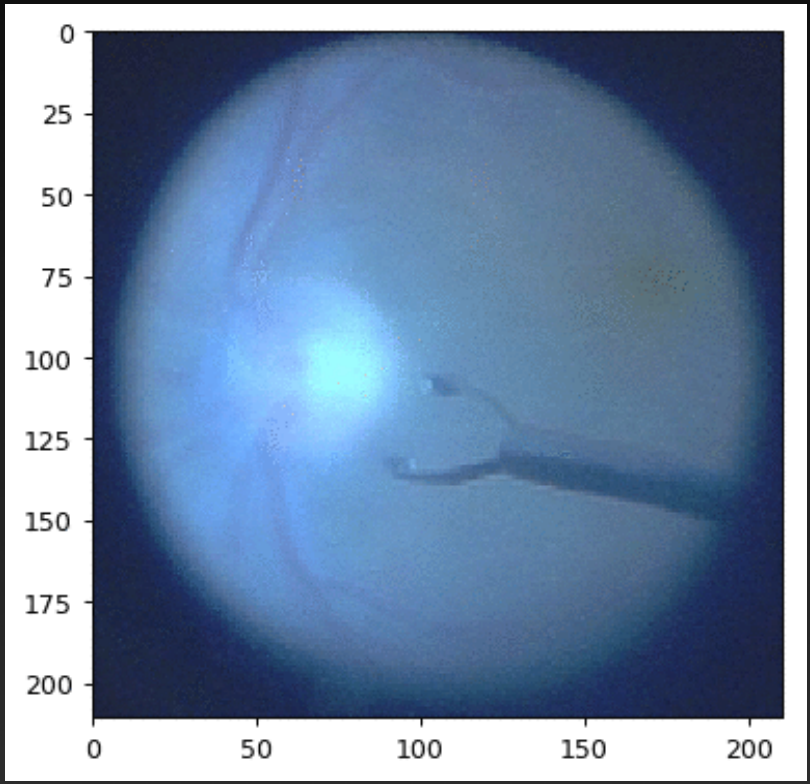
During Retinal Microsurgery

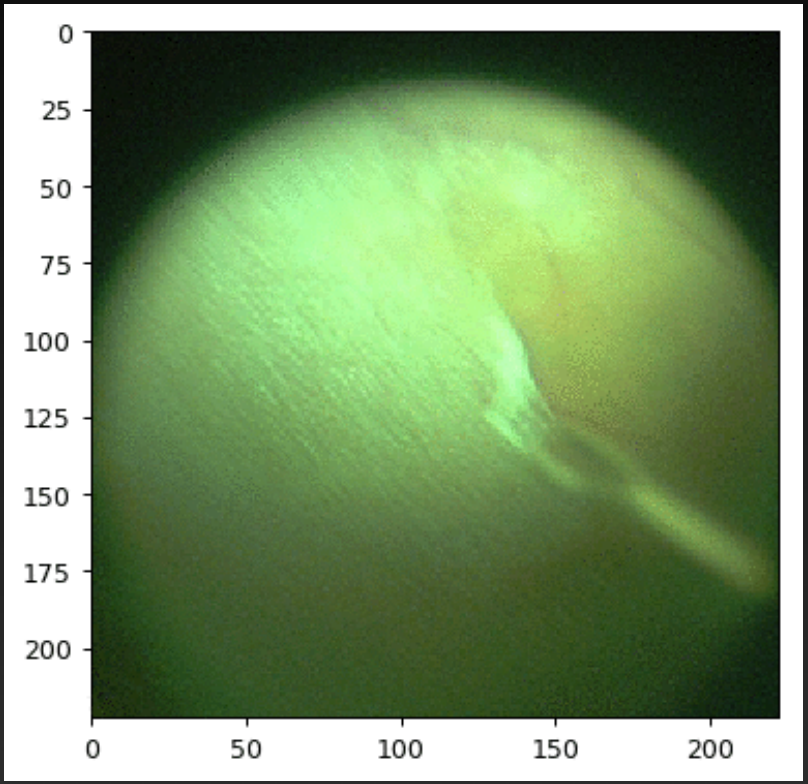
May 2018 - Noel Schenk and Sandro Boccuzzo

Our Final Approach

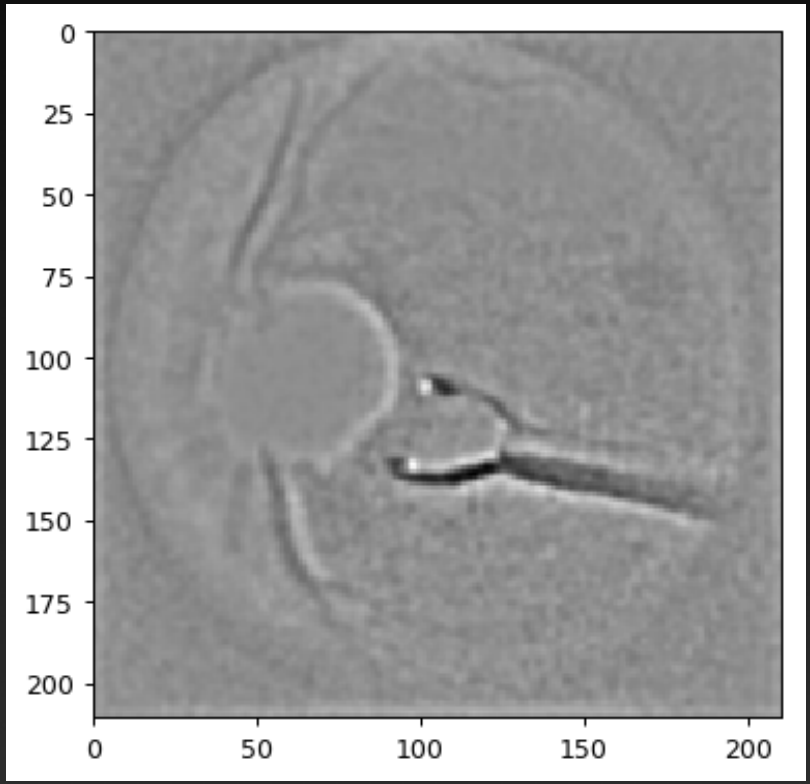
Detection of dominant color
Eye stabilization
Optimizing eye texture
Patch creation
Matching and adjustment

Eye stabilization





Optimizing eye texture



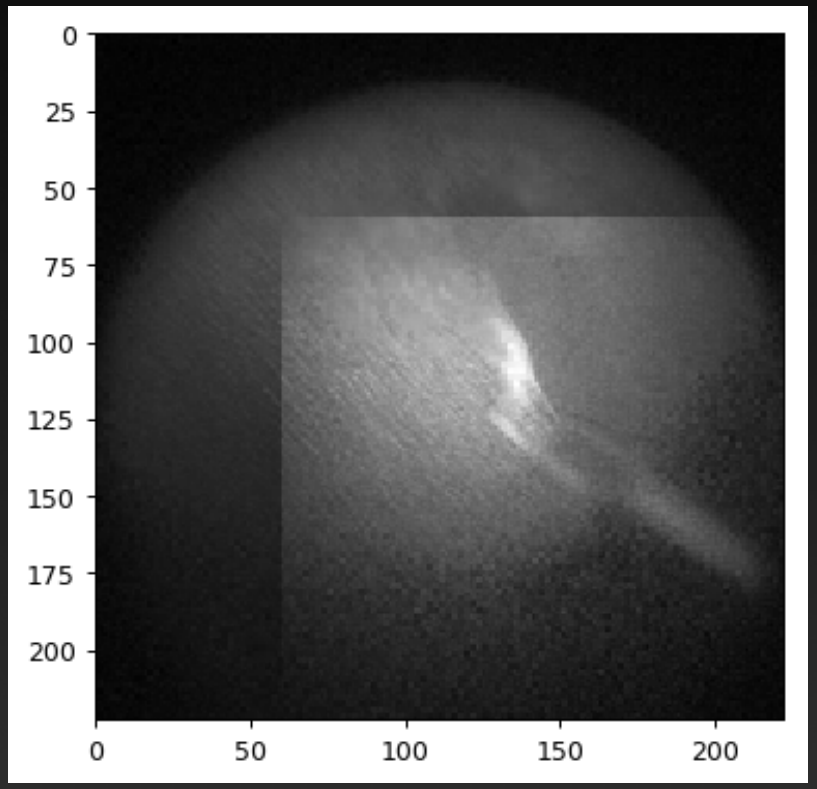
Gauss-filter around previous solution

Sharpening

Contrast correction

Difference of Gaussians (DoG)

Optimizing eye texture



Gauss-filter around previous solution

Sharpening

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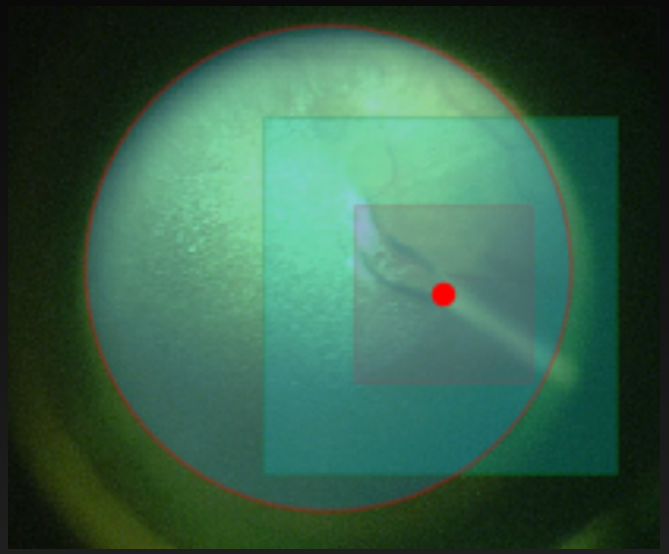
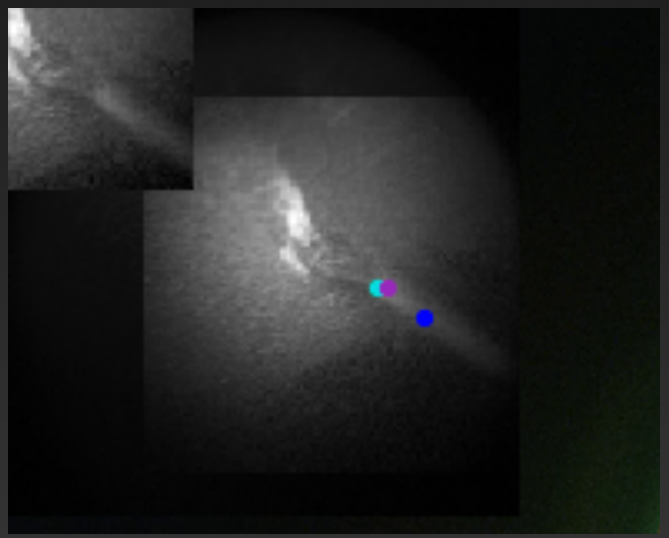
Difference of Gaussians (DoG)

Patch creation

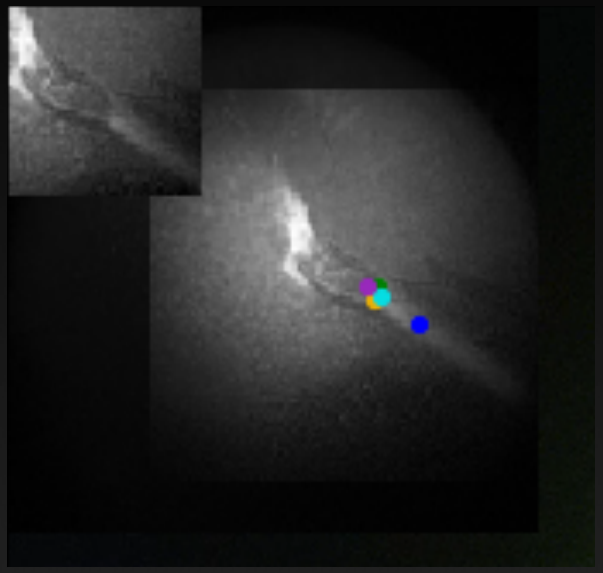


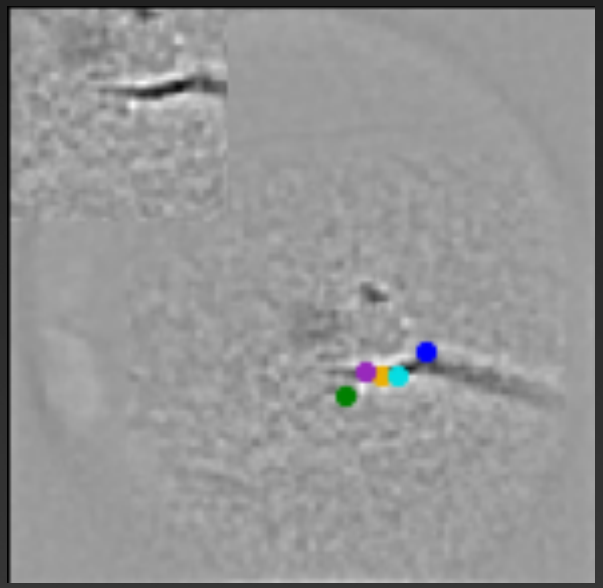


Select the area around the last position

Store the first patch and the patches of the last 2 iterations

Matching and adjustment





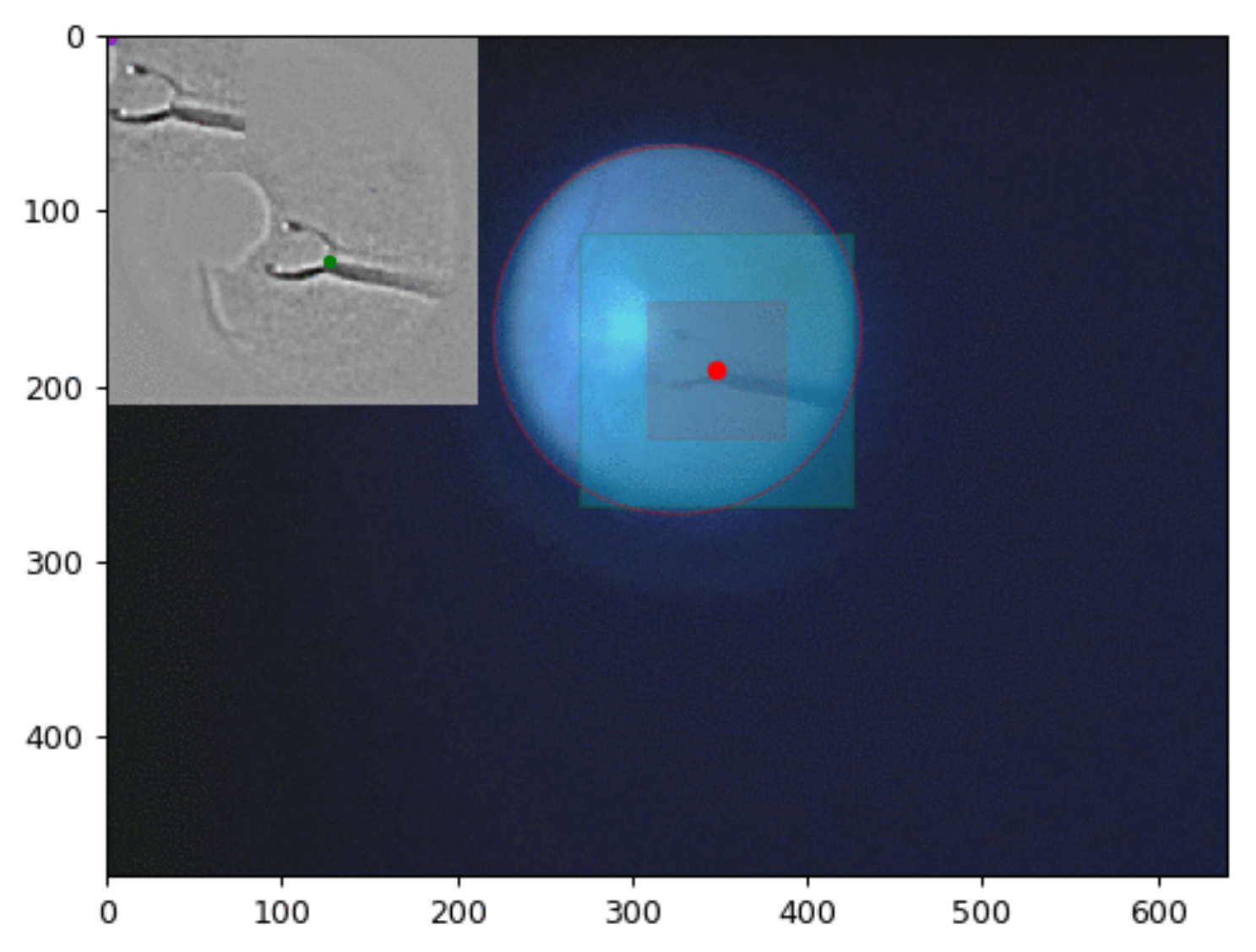
Matching the **previous patch** with the **current optimizing eye texture**

Create a **solution candidate patch**

Match the candidate patch with the previous 2 iteration patches and the first.

Adjust solution by the average of the best two of three differences

Solution for Case-study a



Solution for Case-study b