Report:

1. Demo1 [Efficiency in creating single frame image]

We test the creation of foveated image on seveal images and test the run time, and the result is shown in the table below:

For RGB images:

ImageName	Fv obj creation time(ms)	Im Recon time(ms)	Series Recon time(ms)
Flower1.jpg	0.283	5.00	0.0949
dt.jpeg	0.300	3.71	0.0588
Wallstreet.jpg	0.341	4.37	0.108
D1.jpeg	0.277	3.60	0.0805

For grayscale image:

ImageName	Fv obj creation time(ms)	Im Recon time(ms)	Series Recon time(ms)
Flower1.jpg	0.269	3.53	0.0490
dt.jpeg	0.267	3.53	0.0663
Wallstreet.jpg	0.309	3.27	0.0915
D1.jpeg	0.265	3.38	0.0482

As we can see in the table, the average object creation time is from around 0.26ms to 0.35ms, which is significantly smaller than the refresh rate of most webcams(16ms/frame). Thus the project is capable of image processing in video streams.

The efficiency improvement from RGB to grayscale is not as large as expected (only about 15% in most cases). So processing everything in RGB format will be a better choice considering that it carries 3 times information of gray scale images.

Demo2: [Efficiency in creating foveated video stream]
We record the run time of each frame creation, the result is stored in file **frameTime.xlsx**. We record 141 total frames, and result in a 8.39ms average runtime for each frame, which is much smaller than the requirement of a 60fps webcam.