

# EyeTracker User Manual

Version 0.1, 20210813

By Dr. Jorrit Montijn

Cortical Structure and Function group

Netherlands Institute for Neuroscience

E-mail: [j.montijn@nin.knaw.nl](mailto:j.montijn@nin.knaw.nl)

## Contents

|   |   |
|---|---|
| Overview.....   | 3 |
| Installation instructions.....                                    | 4 |
| Before you start.....   | 4 |
| Installing the external libraries.....                            | 4 |
| Installing the eye-tracking repository and its dependencies ..... | 4 |
| Workflow summary.....   | 4 |
| User guide.....   | 5 |
| Running an experiment .....                                       | 5 |
| Preprocessing your data.....                                      | 6 |
| Compiling the library and pre-processing the data.....            | 6 |
| Setting the variables and parameters .....                        | 6 |
| Technical descriptions.....                                       | 7 |
| Troubleshooting .....   | 8 |

## **Overview**

This toolbox was created to work as an optional module for the Acquipix data acquisition and pre-processing pipeline, but you can also use it as a stand-alone eye-tracking program.

## **Installation instructions**

### **Before you start:**

1. Make sure your computer is up-to-date, and has compatible (not necessarily the newest) CUDA drivers for your Nvidia GPU. If you don't have an Nvidia GPU, you can still use the eye tracker, but many GPU-accelerated functions will be slower.

### **Installing the external libraries**

1. Install the required interface to stream your camera's data into matlab. If your camera works with the genicam interface, you can find the install package in the root directory.

### **Installing the eye-tracking repository and its dependencies:**

1. Download the EyeTracker repository at <https://github.com/JorritMontijn/EyeTracker>
2. Download the GeneralAnalysis repository from <https://github.com/JorritMontijn/>
3. Optional: If you wish to combine the eye-tracker with the neuropixels data pipeline, download <https://github.com/JorritMontijn/Acquipix> and follow the instructions.

### **Workflow summary:**

Still to be written...

## **User guide**

### **Running an experiment**

Still to be written...

## **Preprocessing your data**

*Compiling the library and pre-processing the data*

Still to be written...

*Setting the variables and parameters*

Still to be written...

## **Technical descriptions**

Still to be written...

## **Troubleshooting**

Question (“actually, it’s more of a comment”): *It doesn’t work*

Answer: Restart your PC

Q: *I downloaded everything, but it says files are missing*

A: Double check you have added all folders to the path in Matlab, you have the required Matlab toolboxes installed (Curve Fitting, Parallel Computing, Image Processing and Image Acquisition), and you’re using a supported matlab version: R2019b is tested and works; anything earlier than R2016b will fail for sure; other versions might work. If it’s still not working after you’ve tried the above, google the filename and reinstall its source repository. If it still fails, create a report here: <https://github.com/JorritMontijn/EyeTracker/issues>.

Q: *I cannot run any GPU code in matlab (i.e., gpuArray() fails)*

A: Make sure that you have the correct CUDA drivers installed for your GPU. Note that if you’re using anything other than a (modern) Nvidia GPU, you cannot run CUDA.

Q: *I found a bug*

A: Great! Or at least, it’s great that you found it, not that it’s there. If you’ve fixed it, you can make a pull request, otherwise you can create a bug report here: <https://github.com/JorritMontijn/EyeTracker/issues>. Please copy/paste the matlab error message and as much detail as you can about what you were doing when it happened. If I cannot recreate the issue, I probably won’t be able to fix it.