

University of Nevada, Reno
Consent Form for Mobile eye tracking to understand natural visual statistics

Title of Study: Mobile eye tracking to understand natural visual statistics
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Study ID Number: 1459041-1
Sponsor:

SUMMARY OF KEY ELEMENTS: With this form, we are asking for your consent to participate in a research study we are conducting. Your participation in this study is completely voluntary. The aim of the research is to collect data about how people move their eyes and head during their daily lives and the kinds of objects and scenes that people look at and experience visually. This data will become part of a database that is freely accessible on the internet. The intended purpose of the database is to advance vision research. Participation will require you to wear a head-mounted device that records head and eye movement as well as video of the world in front of you and of your eyes (including your irises) for a period of up to 2 hours. The device will be connected to a laptop or mini-computer that you will also carry in a backpack or other bag. The study involves minimal risk of physical harm. You may decide to stop your participation at any time, and you may also decide to withdraw your data from the study at any time with no negative consequences. There are also no negative consequences if you decide not to participate in the study.

If you have previously consented to participate in this research, please note that this consent is asking for your permission to share additional information about you relative to previous consent forms. As we detail below, we are asking for your consent to share demographic information about you (including your age, sex, and race) along with publicly released data, and videos of your eyes (which will likely include clear images of your irises) in a separate dataset with more restrictive permissions. Please see below for details on the risks and benefits of sharing this data.

Introduction

You are being invited to participate in a research study. Before you agree to be in the study, read this form carefully. It explains why we are doing the study; and the procedures, risks, discomforts, benefits, and precautions involved.

At any time, you may ask one of the researchers to explain anything about the study that you do not understand.

You do not have to be in this study. Your participation is voluntary. If you do not agree to participate, there will be no negative consequences for you. If you are a student, not participating, or withdrawing before completing the study will not affect your grades.

Take as much time as you need to decide. If you agree now but change your mind, you may quit the study at any time. Just let one of the researchers know you do not want to continue.

Why are we doing this study?

We are conducting this research to learn more about how people move their eyes and head during their daily lives and the kinds of objects and scenes that people look at and experience visually.

Benefits of research cannot be guaranteed but we hope to learn how visual processing is influenced by the statistics of natural visual experience. The recorded data may also be used to train computer vision programs, leading to better computer vision tools.

Why are we asking you to be in this study?

We are asking you to be in this study because you fit the requirements we have set out to achieve a balanced sample across participants in terms of age, gender, and other demographic information.

How many people will be in this study?

We expect to enroll up to 160 participants over 4 years at the University of Nevada, Reno.

What will you be asked to do if you agree to be in the study?

If you choose to participate in this study, you will be asked to wear a head-mounted device that will track your head and eye movements. This means the device will take close-up videos of your eyes. The device also contains a camera that will record video of the objects and scenes you are looking at. Data will be recorded to a laptop or mini-computer that you will carry in a backpack or other bag. You will also report your age, sex, race, and height, and the distance between your eyes may be measured to help calibrate some estimates of where you are looking. The recording session will begin with fitting of the equipment to your head and calibration of the eye tracker. If for some reason we experience technical difficulties getting the equipment to fit, getting calibration to work, or getting the data to record, we may have to postpone or terminate the data collection. If setup is successful, you will then go about normal daily activities for up to 2 hours. Alternatively, you may be asked to perform particular kinds of movement to assess our ability to track your eyes under different controlled conditions. For example, you may walk on a treadmill and/or make guided eye movements to different targets around you. After you complete your activities or task, data collection will be stopped, and you will have the opportunity to review the data you have generated. After review, you may exclude any or all video from the database for any reason. There are no consequences for excluding data. Before the recorded video is released, faces, will be blurred with an automated algorithm (see below for the limits of this anonymization). If you interact with other people, they must sign a separate consent form to appear in your recordings. Please consult the investigator if you will be interacting with other people during your session. After review of data, you will be finished. All data that you consent to include will be included in a database of videos and associated eye and head movement data that will be accessible to researchers and other interested parties. Eye videos, specifically, will not be shared fully publicly, but only with

researchers who have institutional review board oversight to conduct human subjects research on the data. Other data, including world videos, demographics (age, sex, and race), estimated gaze, and other labels derived from the world videos, will be shared without restrictions. Data will be shared via the web site <https://nyu.databrary.org/>, and/or similar data sharing sites as appropriate for different types of files (e.g. the Open Science Foundation website, <http://osf.io>).

How long will you be in the study?

The study will take up to 2 hours of your time for each session. You may be asked to participate in multiple sessions, but continued participation is not a requirement.

What are your choices if you do not volunteer to be in this research study?

The decision not to participate in this study will have no negative consequences of any kind.

What if you agree to be in the study now, but change your mind later?

You do not have to stay in the study. You may withdraw from the study by informing the experimenter that you have changed your mind and that you do not wish to participate. Also, at any time, even after the data collection is complete, you may choose to have any and all of your data excluded from the database. You may do this by informing the experimenter of your decision.

If you decide to exclude your data after public release of the data, your data will be removed from any public database. Since the data will be publicly shared, if you decide after the data has been publicly available for some time, we cannot guarantee that the data will be removed from the computers of all researchers who may have downloaded the dataset prior to exclusion of your data.

What if the study changes while you are in it?

If anything about the study changes or if we want to use your information in a different way, we will tell you and ask if you want to stay in the study. We will also tell you about any important new information that may affect your willingness to stay in the study.

Is there any way being in this study could be bad for you?

This study entails minimal risk of physical harm. We do not foresee any significant physical risks other than possible mild discomfort due to wearing of the equipment or carrying the backpack. The eye-tracker is similar to a normal pair of glasses but a small portion of the field-of-view will be occluded by the cameras that track the eyes. We do not expect this occlusion to lead to difficulties seeing or moving about normally.

Since the data is intended for public release, there may be a risk to your privacy depending on the contents of the videos recorded. As we describe below, we will take steps to deter easy identification of you from the data, but your anonymity cannot be guaranteed, and future advances in image and data processing may be able to use the content of the videos, your patterns of eye or head movements, or some combination of these elements to reveal information about you. You will have the option to opt in to a mailing list that will keep you informed about advances in what image and data processing technology can reveal about you

based on the videos you have contributed. As stated above, you may have any or all of your data removed from the database at any time by contacting the experimenter.

There is some risk in providing a video of your eye to a database. Detailed images of the iris can provide a unique biometric identifier for an individual. Iris scans are currently used in some cases for identification in financial transactions, travel, and voting. Thus, if a malicious actor has an image of your iris linked to your identity, you could be at risk of identity theft. However, as we describe below, we will take steps to reduce the possibility that your identity can be deduced and linked to your iris images.

Please initial here if you understand the risks of sharing iris images

What happens if you become injured because of your participation in the study?

In the event that this research activity results in an injury, treatment will be available. This includes first aid, emergency treatment, and follow-up care as needed. Care for such injuries will be billed in the ordinary manner to you or your insurance company.

Will being in this study help you in any way?

We cannot promise that you will benefit personally from being in this study.

Who will pay for the costs of your participation in this research study?

No costs are associated with participation in this study.

Will you be paid for being in the study?

No

Who will know that you are in in this study and who will have access to the information we collect about you?

The researchers, University of Nevada, Reno Institutional Review Board, the US Department of Health and Human Services (DHHS), and the National Science Foundation will have access to your study records.

How will we protect your private information and the information we collect about you?

We will treat your identity with professional standards of confidentiality and protect your private information to the extent allowed by law. You will be given the opportunity to review the video that is collected, and after review, you may exclude any or all video from the database for any reason. There are no consequences for excluding data.

Before the recorded video is publicly released, faces will be blurred with the best available automated methods. Faces will be detected by computer programs, and the detected regions

detected in each video frame will be blurred. Automated algorithms sometimes fail to detect faces if the faces appear at oblique angles, are masked, or are partially occluded or otherwise distorted. Most often, such frames are difficult for humans to identify as well. These programs are consistent with industry standards for anonymization, but they cannot be guaranteed to work perfectly.

It is also important to note that it is the nature of first-person video and eye tracking data to be highly personal. It is a record of what you see in the environment around you, including (potentially) your place of work, your house, your belongings, your computer, etc, as well as where you look in that environment. Some information that may identify you, including your age, race/ethnicity, images of your irises, and videos of your personal spaces which may be potentially recognizable to others, will be included in the publicly released database (see below for special treatment of eye videos with irises in them). There is no guarantee that a determined researcher could not identify you from some combination of this demographic data combined with data that is recorded in a given session.

Thus, while we will make efforts to deter identification in order to protect privacy, anonymity cannot be guaranteed, and you should not record anything that you would not want seen and associated with you. We consider these data to be safer for your privacy than posting on social media, but not as safe as saving photos to your own computer.

To dissociate your potentially identifiable world video and demographic data from your iris images, iris images will be shared with restricted permissions on www.databrary.org. Only researchers with human subjects oversight will be allowed to download the eye videos. Other data will be freely shared on databrary and/or on other data sharing sites, e.g. the Open Science Foundation website, <http://osf.io>. There will be a code to link sessions of eye videos with sessions of world videos, but due to required human subjects oversight, there will be restrictions on how any researchers who download the data may store and use it. This will substantially limit the pool of people with potential access to your identity and iris image.

Data appearing in the database will not be linked to written records of your name. If it is necessary to retain written identifying information such as your name, we will use a code instead, and a master list will be kept that links this code to your name. The master list will be stored securely in a password protected folder on the computer and will be stored separately from the research data. We will not use your name or other information that could readily identify you in any reports or publications that result from this study.

Do the researchers have monetary interests tied to this study?

The researchers and/or members of their families have no monetary interests tied to this study.

Who can you contact if you have questions about the study or want to report an injury?

At any time, if you have questions about this study or wish to report an injury or complication that may be related to your participation in this study, contact Dr. Mark Lescroart at (775) 682 6807 or Dr. Paul MacNeilage at (775) 682 8312.

Who can you contact if you want to discuss a problem or complaint about the research or ask about your rights as a research participant?

You may discuss a problem or complaint or ask about your rights as a research participant by calling the University of Nevada, Reno Research Integrity Office at (775) 327-2368. You may also use the online *Contact the Research Integrity Office* form available from the [Contact Us page](#) of the University's Research Integrity Office website.

Agreement to be in study

If you agree to participate in this study, you must sign this consent form. We will give you a copy of the form to keep. If you are recording in an environment with a reasonable expectation of privacy such as a personal residence or other non-public place, we encourage participants to obtain the consent of any friend or family member who may appear in the videos. We further ask participants to stop recording even in public if any person being filmed expresses a desire for them to stop.

Continuing consent and retroactive consent to share data

If you have previously participated in this study, your signature below gives your consent to share your previously collected data as described above given all the information contained in this consent form. As stated above, continuing consent is not mandatory, and you may choose to remove portions of your data or entire sessions by contacting the researchers. Deleting data sessions or not giving consent to share data at all will have no negative consequences.

Participant's Name Printed

Signature of Participant

Date

Signature of Person Obtaining Consent

Date