Plan Overview

A Data Management Plan created using DMPonline

Title: Thesis: Investigating the effect of varying stimuli properties on the SNR in SSVEP

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Template: TU Delft Data Management Plan template (2021)

Project abstract:

Steady-state visually evoked potentials are generated by showing visual stimuli flickering at various frequencies. The goal is to investigate the effects that shape, color, frequency, and size of the stimuli has on the measured signal to noise ratio. The brainwaves are acquired using an EEG headset. Additionally, eye tracking is used to track the gaze of the participants on the screen.

Five participants will have to look at a screen showing different variations of stimuli while wearing the EEG helmet to generate a dataset. At the same time eye tracking will be used to track the gaze of the participants.

The EEG data will be published. Participants will be referred to by subject numbers. Thus, no name can be backtracked to a specific person. In the paper, the age and gender distribution will be stated. Furthermore, it will be explained which subjects wear glasses or are experienced with SSVEP-based paradigms.

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Thesis: Investigating the effect of varying stimuli properties on the SNR in SSVEP

0. Administrative questions

1. Name of data management support staff consulted during the preparation of this plan.

2. Date of consultation with support staff.

2022-10-30

I. Data description and collection or re-use of existing data

3. Provide a general description of the type of data you will be working with, including any re-used data:

Type of data	File format(s)	How will data be collected (for re-used data: source and terms of use)?	Purpose of processing	Storage location	Who will have access to the data
EEG data (processed)	.csv	data will be collected using an EEG headset	To control a robotic arm with/ training classifiers with	project drive and 4TU	only the investigator/reseracher and its supervisor. Possibly other persons after publication but with restricted access
EEG data(raw)	.csv	data will be collected using an EEG headset	To control a robotic arm with/ training classifiers with	project drive and 4TU	only the investigator/reseracher and its supervisor. Possibly other persons after publication but with restricted access
Python files	.py	Written by investigator	Analysis scripts, controlling the robotic arm, for live stream with the EEG headset, showing the interface that evokes the brain signals.	Github	Anyone, publically available
Eye-tracking data	.csv	Using eye-tracker		project drive and 4TU	only the investigator/reseracher and its supervisor. Possibly other persons after publication but with restricted access
Informed Consent Forms	A4 (physical)	Before the experiments each participant will sign the document	To analyze the age and gender distribution of the subject group, and inform the subjects about the recorded data and experiment.	Locker (physical)	Yke Bauke Eisma(key)
The videos showing the various interfaces	.mp4	Generated by python files	For people that want to reproduce the results	project drive and 4TU, Github	Anyone, publically available

4. How much data storage will you require during the project lifetime?

- < 250 GB

It will include some pictures of the experiments. The videos will take up the most data. Estimated to be around 100GB. Then a couple of GB's of .csv data and machine learning models.

II. Documentation and data quality

5. What documentation will accompany data?

- Methodology of data collection
- README file or other documentation explaining how data is organised
- Data will be deposited in a data repository at the end of the project (see section V) and data discoverability and re-usability will be ensured by adhering to the repository's metadata standards

A thesis report will be publically available that describes the used methodology for data collection and hardware. Furthermore, a README will explain how the data is organized and the project is structured. The EEG data will be put on 4TU with GitHub linked to it. The python files will be put in the GitHub repository in combination with the python files.

III. Storage and backup during research process

6. Where will the data (and code, if applicable) be stored and backed-up during the project lifetime?

- OneDrive
- Project Storage at TU Delft
- Another storage system - please explain below, including provided security measures

Github/Onedrive and locally (external hard drive) are used for the code (python scripts) and the machine learning models.
Videos and photos will be stored in the project drive and/or locally but show no participants.
project drive for the EEG data accessed through VPN.

The informed consent forms will be saved in a locker by Yke bauke Eisma.

IV. Legal and ethical requirements, codes of conduct

7. Does your research involve human subjects or 3rd party datasets collected from human participants?

- Yes

8A. Will you work with personal data? (information about an identified or identifiable natural person)

If you are not sure which option to select, ask your Faculty Data Steward for advice. You can also check with the privacy website or contact the privacy team: privacy-tud@tudelft.nl

- Yes

The project leader/investigator will work with EEG data, name, age, gender, and use of glasses (all stated on the consent form). However, the age and gender distribution of each participant are only reported in the published paper. Additionally, participants will get numbers assigned to refer them to so no name has to be used.

8B. Will you work with any other types of confidential or classified data or code as listed below? (tick all that apply)

If you are not sure which option to select, ask your Faculty Data Steward for advice.

- No, I will not work with any confidential or classified data/code

9. How will ownership of the data and intellectual property rights to the data be managed?

For projects involving commercially-sensitive research or research involving third parties, seek advice of your Faculty Contract Manager when answering this question. If this is not the case, you can use the example below.

The datasets underlying the published papers will be publicly released following the TU Delft Research Data Framework Policy. During the active phase of research, the project leader from TU Delft will oversee the access rights to data (and other outputs), as well as any requests for access from external parties. They will be released publicly no later than at the time of publication of corresponding research papers.

10. Which personal data will you process? Tick all that apply

- Names and addresses
- Gender, date of birth and/or age
- Signed consent forms
- Data collected in Informed Consent form (names and email addresses)
- Special categories of personal data (specify which): race, ethnicity, criminal offence data, political beliefs, union membership, religion, sex life, health data, biometric or genetic data
- Other types of personal data - please explain below

EEG data recorded from their brains, eye-tracking data

11. Please list the categories of data subjects

students, employees of the TU Delft. These are healthy adults.

12. Will you be sharing personal data with individuals/organisations outside of the EEA (European Economic Area)?

- No

15. What is the legal ground for personal data processing?

- Informed consent

16. Please describe the informed consent procedure you will follow:

All study participants will be asked for their written consent for taking part in the study and for data processing before the start of the experiment.

17. Where will you store the signed consent forms?

- Other - please explain below

These will be saved by Dr. Ir. Y.B. Eisima in a locker.

18. Does the processing of the personal data result in a high risk to the data subjects?

If the processing of the personal data results in a high risk to the data subjects, it is required to perform a Data Protection Impact Assessment (DPIA). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data during your research (check all

that apply).
If two or more of the options listed below apply, you will have to complete the DPIA. Please get in touch with the privacy team: privacy-tud@tudelft.nl to receive support with DPIA.
If only one of the options listed below applies, your project might need a DPIA. Please get in touch with the privacy team: privacy-tud@tudelft.nl to get advice as to whether DPIA is necessary.
If you have any additional comments, please add them in the box below.

- Sensitive personal data

The age and gender distribution will be processed in combination with the EEG data of the subjects and if they wear glasses or not.

19. Did the privacy team advise you to perform a DPIA?

- No

22. What will happen with personal research data after the end of the research project?

- Anonymised or aggregated data will be shared with others
- Personal data will be shared with others - please explain which personal data will be shared, with whom, how and whether you have specified this in the informed consent form

Informed consent forms should be archived with the library.

EEG data and eye-tracking data will be uploaded to 4TU under restricted access.

23. How long will (pseudonymised) personal data be stored for?

- 10 years or more, in accordance with the TU Delft Research Data Framework Policy

24. What is the purpose of sharing personal data?

- For research purposes, which are in-line with the original research purpose for which data have been collected

25. Will your study participants be asked for their consent for data sharing?

- Yes, in consent form - please explain below what you will do with data from participants who did not consent to data sharing

if the participant did not consent to the use of data. It will be discarded and not be used for the experiments but deleted.

V. Data sharing and long-term preservation

27. Apart from personal data mentioned in question 22, will any other data be publicly shared?

- All other non-personal data (and code) produced in the project
- All other non-personal data (and code) underlying published articles / reports / theses

the EEG data and eye-tracking of the test persons during experiments will be published but processed on 4TU.
The raw EEG data will be accessed through restricted access on 4TU.

29. How will you share research data (and code), including the one mentioned in question 22?

- I will share my data and code via git(lab)/subversion and also create a snapshot in a repository
- All anonymised or aggregated data, and/or all other non-personal data will be uploaded to 4TU.ResearchData with public access
- All pseudonymised data will be uploaded to 4TU.ResearchData with restricted access

30. How much of your data will be shared in a research data repository?

- < 100 GB

31. When will the data (or code) be shared?

- As soon as corresponding results (papers, theses, reports) are published

32. Under what licence will be the data/code released?

- MIT License
- CC BY

VI. Data management responsibilities and resources

33. Is TU Delft the lead institution for this project?

- Yes, the only institution involved

34. If you leave TU Delft (or are unavailable), who is going to be responsible for the data resulting from this project?

Y. B. Eisma, Y.B.Eisma@tudelft.nl

35. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

Github is free of charge up to 10GB. We do not expect to exceed this and therefore there are no additional costs of long-term preservation. This is meant for the code and machine learning models

4TU.ResearchData is able to archive 1TB of data per researcher per year free of charge for all TU Delft researchers. We do not expect to exceed this and therefore there are no additional costs of long term preservation. This is meant for the EEG Data