Plan Overview

A Data Management Plan created using DMPonline

Title: The effect of eHMI design on cyclists’ crossing behaviour when interacting with Automated Vehicles in a shared space area

Creator: Jenno van der Poel

Principal Investigator: Jenno van der Poel

Data Manager: Jenno van der Poel

Project Administrator: Jenno van der Poel

Affiliation: Delft University of Technology

Template: TU Delft Data Management Plan template (2021)

Project abstract:

This research will be looking at the interaction between cyclists and Automated Vehicles (AVs) in a shared space area, using a Virtual Reality (VR) environment. In specific it will be researching the cyclists’ crossing behaviour when interacting with an AV that is equipped with different external Human-Machine Interfaces (eHMI). This will be tested in a VR experiment in which the participants will engage in the role of the cyclist. They will be using a stationary bicycle simulator and a VR headset to be fully immersed in the virtual environment. In this virtual environment they will encounter an AV, equipped with a certain eHMI, in a shared space area. The participant is asked to behave as they would in real-life. Afterwards, the participant will be asked to fill out a post-experiment questionnaire.

ID: 159398

Start date: 01-11-2024

End date: 31-12-2024

Last modified: 02-12-2024

The effect of eHMI design on cyclists’ crossing behaviour when interacting with Automated Vehicles in a shared space area

0. Administrative questions

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

Xinyan Fan

2. Date of consultation with support staff.

2024-10-09

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
Gender and age categories of the participants	.doc file	Online post-experiment survey using Microsoft Forms	To be able to make correlations between gender/age and the crossing behaviour of the participant	Data will be stored on a computer in the MXR Lab at TU Delft, then will be transferred to SURF drive	The PI (Jenno van der Poel) and the supervisor of the project (Dr. Yan Feng)
Survey responses on experience and perspectives regarding the VR experiment	.doc file	Online post-experiment survey using Microsoft Forms. The participants will be recruited by distributing folders throughout the TU Delft campus as well as online via social media, but can also be recruited through personal connections. Around 30 participants will be recruited.	To understand the intentions of the participants and their attitude towards AVs and different eHMIs	Data will be stored on a computer in the MXR Lab at TU Delft, then will be transferred to SURF drive	The PI (Jenno van der Poel) and the supervisor of the project (Dr. Yan Feng)

Experimental data, such as speed change, gazing time and crossing initiation time	.csv file	Virtual Reality experiment, using sensor data	To collect data on the physical behaviour of the participant to understand how they react to different eHMIs	Data will be stored on a computer in the MXR Lab at TU Delft, then will be transferred to SURF drive	The PI (Jenno van der Poel) and the supervisor of the project (Dr. Yan Feng)
Signed informed consent forms	Signed on paper	Before the experiment the participants are asked to read and sign an informed consent form about the VR experiment and the post-experiment questionnaire.	To get informed consent on performing the experiment and survey	The signed consent forms on paper will be safely stored on the TU Delft	The PI (Jenno van der Poel) and the supervisor of the project (Dr. Yan Feng)
Contact information of the participants	.dox file	Will be collected using social media, email and personal connections	Will not be processed and will only be used to get into contact with the participants and to set up the experiments. Will not be used for further research purposes	The contact information will be stored in a .dox file in the SURF drive and will be destroyed after the data collection	The PI (Jenno van der Poel) and the supervisor of the project (Dr. Yan Feng)

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

- < 250 GB

II. Documentation and data quality

5. What documentation will accompany data?

- README file or other documentation explaining how data is organised
- Methodology of data collection

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?

- Another storage system - please explain below, including provided security measures
- SURFdrive

The data will first be stored and collected on a desktop PC or laptop at the MXRlab on the TU Delft. It will then be transferred to a SURF drive folder which can only be accessed by the PI and the supervisor of the project.

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, first ask your Faculty Data Steward for advice. You can also check with the privacy website . If you would like to contact the privacy team: privacy-tud@tudelft.nl, please bring your DMP.

- Yes

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 data will not be publicly shared or released. It will only be added as an appendix to the master thesis report which will be published on the TU Delft repository. During the active phase of research, the PI (Jenno van der Poel) will oversee the access rights to data (and other outputs), as well as any requests for access from external parties.

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

- Email addresses and/or other addresses for digital communication
- Telephone numbers
- Names and addresses
- Data collected in Informed Consent form (names and email addresses)
- Signed consent forms
- Gender, date of birth and/or age

Names, adresses and possible telephone numbers and/or email adresses will only be used to get into contact with the participants and to set up the experiments with them. They will not be used or processed for further research purposes and will be destroyed after the data collection.

11. Please list the categories of data subjects

The demographic of the study is any adult. But mainly students (from the TU Delft) will be recruited to take part. Around 30 participants are required to partake in the experiment, of which an equal amount of males as females.

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:

The template from the Human Research Ethics Committee of the TU Delft will be used to write a proper and complete informed consent form on taking part in the study and for data processing. Before conducting the experiment, every participant will be asked to read and sign an informed consent form on paper about both the VR experiment and the post-experiment questionnaire,

including an opening statement and some explicit points, which will be conducted right after the experiment.

17. Where will you store the signed consent forms?

- Other - please explain below

Since they will be on paper, they will be securely stored at the TU Delft

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.

- None of the above applies

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

- Personal research data will be destroyed after the end of the research project

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

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

22?

- My data will be shared in a different way - please explain below

The data will be shared in the thesis report as an appendix on the TU Delft repository

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?

- 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?

The supervisor of the project:
Dr. Yan Feng, y.feng@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)?

There are no costs for data sharing