# Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Stereo-Consistent Hatching from Apparent Ridges for Improved Depth Perception in VR

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**Template:** TU Delft Data Management Plan template (2025)

**Project abstract:**

With the increasing presence and popularity of the Virtual Reality (VR) industry, stereo content becomes more relevant and requires sufficient research for the creation of content. Line drawings are one of the simplest forms of rendering 3D models and are often the foundation or component of other more sophisticated rendering techniques such as cel shading, gooch shading, and hatching. However, line drawing does not consist of a singular style, but instead uses various types of lines to convey information of the model. While certain lines are view-independent, such as creases, ridges, and valleys, apparent ridges are view-dependent, resulting in stereo-inconsistent lines being drawn. To address this, we develop a stereo-consistent formulation of apparent ridges that ensures visual coherence in binocular perception. Furthermore, we introduce a hatching system guided by principal curvatures, allowing for improved depth and shape detection. The implementation makes use of GPU-based world-space calculations, improving depth perception in in stereoscopic VR.

**ID:** 187023

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**Copyright information:**

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# Stereo-Consistent Hatching from Apparent Ridges for Improved Depth Perception in VR

## 0. Administrative questions

**1. Provide the name of the data management support staff consulted during the preparation of this plan and the date of consultation. Please also mention if you consulted any other support staff.**

Richard, Grimes, Data Steward at the Faculty of EEMCS, has reviewed this DMP on [24/10/2025].

**2. Is TU Delft the lead institution for this project?**

- Yes, the only institution involved

## I. Data/code description and collection or re-use

**3. Provide a general description of the types of data/code you will be working with, including any re-used data/code.**

| **Type of data/code** | **File format(s)** | **How will data/code be collected/generated?** *For re-used data/code: what are the sources and terms of use?* | **Purpose of processing** | **Storage location** | **Who will have access to the data/code?** |
|---|---|---|---|---|---|
| Anonymized data on depth and shape perceived of abstract objects | .csv files | Answers from the participants will be interpreted and collected manually by the researcher | Understand how users perceive abstract regions using hatching lines in VR | SURFdrive | Tim Tian, Petr Kellnhofer |
| Mesh models | .obj files | They will be created by the researcher beforehand | To allow for reproduction of the study | SURFdrive | As above |
| Rendering code | .cpp, .glsl files | Created by the researcher | To allow for reproduction of the study | SURFdrive | As above |
| Opening statements | .pdf files | An opening statement with a consent checkbox will be collected from the participants | To gain consent | SURFdrive | As above |

## II. Storage and backup during the research process

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

- < 250 GB

### 5. Where will the data/code be stored and backed-up during the project lifetime? (Select all that apply.)

- SURFdrive

## III. Data/code documentation

### 6. What documentation will accompany data/code? (Select all that apply.)

- Data – Methodology of data collection

## IV. Legal and ethical requirements, code of conducts

### 7. Does your research involve human subjects or third-party datasets collected from human participants?

***If you are working with a human subject(s), you will need to obtain the HREC approval for your research project.***

- Yes – please provide details in the additional information box below

I intend to apply for ethical approval from the Human Research Ethics Committee, but have not yet done so.

### 8. Will you work with personal data? (This is information about an identified or identifiable natural person, either for research or project administration purposes.)

- No

**9. Will you work with any other types of confidential or classified data or code as listed below? (Select all that apply and provide additional details below.)**

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

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

**10. 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.***

This is an internal TUD MSc thesis project.

**11. Which personal data or data from human participants do you work with? (Select all that apply.)**

- Names as contact details for administrative purposes

I will only be collecting feedback from the participants during the experiment with my own interpretation. No personal data or direct answers from participants will be stored.

**12. Please list the categories of data subjects and their geographical location.**

Interview participants are students / adults in the Netherlands, specifically in Delft

## V. Data sharing and long term preservation

**26. What data/code will be publicly shared?**

***Please provide a list of data/code you are going to share under 'Additional Information'.***

- All data/code produced in the project

Code for the rendering of Apparent ridge lines and hatching lines will be available, as well as the used meshes (.obj). Additionally, aggregated answers will be stored.

**28. How will you share your research data/code?**

***Select all that apply and provide additional details below.***

- All data/code will be uploaded to 4TU.ResearchData
- I am a Bachelor's/Master's student at TU Delft and I will share the data/code in the body and/or appendices of my thesis/report in the TU Delft Repository

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

- < 100 GB

**31. When will the data/code be shared?**

- At the end of the research project

**32. Under what licence(s) will the data/code be released?**

- Other – please explain below

This is an ongoing Master's thesis

## VI. Data management responsibilities and resources

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

My supervisor: Petr Kellnhofer, Assistant Professor, Computer Graphics and Visualization, with email address P.Kellnhofer@tudelft.nl.

**34. 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)?**

It is less than 1TB of Data, thus it is free

**35. Which faculty do you belong to?**

- Faculty of Electrical Engineering, Mathematics, and Computer Science (EEMCS)