

# Informed Consent Form for Participation in User Study

**Study Title:** Interactive Debugging of LLM Agents for Software Development – Usability and Utility Evaluation

**Conducted by:** Robert Hutter

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**Participant's Name:** \_\_\_\_\_ (to be filled in by participant)

**Participant Key:** \_\_\_\_\_ (to be filled in by participant)

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## 1 Purpose of This Form

This form is designed to provide you with information about the user study you are considering participating in. It explains the purpose, procedures, risks, benefits, and your rights as a participant. Your participation in this study is entirely voluntary. You may ask any questions before deciding whether to participate. If you agree to participate, you will be asked to sign this form. You will receive a copy of the signed form for your records.

Under German law, your consent must be informed, voluntary, and explicit. You have the right to withdraw your consent at any time without any negative consequences.

## 2 Background of the Study

This study is part of Robert's Bachelor's Thesis at the Software Lab, focusing on the development of an "Interactive Debugging of LLM Agents for Software Development" tool. The primary objective is to investigate the usability and utility of this developed tool in understanding the behavior of Large Language Model (LLM) agents used in software development, compared to traditional tools.

The study employs A/B testing, where participants are randomly assigned to one of two groups: one using the developed tool and the other using traditional tools (without the developed tool). Participants will solve three tasks designed to test agent trajectory comprehension and the ability to identify bugs in agent behavior. These tasks are highly relevant for developing or reviewing LLM agents.

The study aims to gather insights into how the tool affects task performance, mental workload, and overall user experience. Data collected will contribute to academic research and potential improvements in LLM agent debugging tools.

### **3 Study Procedure**

If you agree to participate, the study will proceed as follows:

1. You will register for the study by completing a participant survey and booking an appointment.
2. Your survey data will be used to balance the two study groups based on qualifications and prior knowledge.
3. You will be assigned a unique participant key for identification purposes during the study. This key is anonymous and cannot be used to determine your personal identity.
4. On the scheduled study day, you will arrive at the designated location.
5. You will be informed about the study background and procedure. You will be asked to sign this informed consent form, as well as a separate GDPR consent form for data protection (which is not part of this document).
6. You will be informed of your assigned study condition (with or without the developed tool).
7. You will receive a brief introduction to LLM agents.
8. You will receive a brief introduction to the tools available to assist in solving the tasks.
9. You will be informed about the first task (focused on agent trajectory comprehension).
10. You will complete the first task. The time required to complete the task will be recorded. After completion, you will fill out a NASA Task Load Index (TLX) form to assess the mental workload associated with the task.
11. You will be informed about the second and third tasks (both focused on bug localization in agent behavior).
12. You will complete the second and third tasks. The time required for each will be recorded, and you will fill out a NASA TLX form after each task.
13. If you were assigned to the group using the developed tool, you will be asked to complete a feedback survey about the tool.
14. Upon completion, you are free to leave.

**The entire study session is expected to last approximately an hour.**

### **4 Additional Information**

Your participation is voluntary, and you may quit or leave the study at any time without penalty or loss of benefits.

No personal identifying information beyond what is necessary for balancing groups and anonymous key assignment will be collected in this study. All data will be anonymized.

If you opted in the participant survey to receive feedback on your task performance, you will be sent a report summarizing the study results at a later date, after data evaluation.

There are no anticipated risks beyond those typical of standard computer-based tasks (e.g., minor mental fatigue). Benefits may include contributing to research on LLM agent tools and, if opted, receiving personalized feedback.

## **5 Consent**

I have read and understood the information provided in this form. I have had the opportunity to ask questions, and any questions have been answered to my satisfaction.

I voluntarily agree to participate in this study as described. I understand that I may withdraw my consent and discontinue participation at any time without prejudice.

I confirm that I am at least 18 years old and capable of providing informed consent under German law.

**Date:**

**Participant's Signature:** \_\_\_\_\_