



INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

Whom to Contact about this study:

Principal Investigator: Aydin Ayanzadeh

Department: Computer Science and Electrical Engineering

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InVLM: VLM-Based Indoor Navigation System for People with Visual Impairments

This is a consent form for participation in a University of Maryland, Baltimore County research project. This study aims to evaluate a new indoor navigation system for visually impaired individuals. This system uses advanced artificial intelligence to provide navigation assistance without requiring changes to the physical environment. Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. Your participation in this research study is voluntary.

I. PURPOSE OF THE RESEARCH:

This study aims to evaluate a new vision-and-language-based indoor navigation system designed for individuals with visual impairments. This system uses artificial intelligence and scene understanding to provide navigation guidance without requiring modifications to the physical environment. Your participation will help us assess the system's effectiveness, identify potential improvements, and advance accessible navigation technologies for future users. Approximately 5-10 participants will be invited to participate. Participants will receive \$40 compensation for completing the study.

II. PROCEDURES:

As a participant, you will complete a brief questionnaire, undergo a 15-minute training session, and perform 10–15 indoor navigation tasks using the system in various environments such as residential spaces, offices, or public areas. Tasks will take approximately 30–45 minutes per session, and the entire study will be completed in one to three visits.

You are being asked to volunteer because you are an adult with visual impairment and have familiarity with assistive navigation tools, which makes your participation valuable for evaluating this system.

Audio or video recordings may be collected during navigation tasks to help the research team analyze system performance. These recordings will remain confidential and will only be labeled with a study identification number. No personal identifying information will be associated with the recordings unless you provide explicit permission. The content may be



INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

transcribed by research staff, and neither the written transcripts nor the recordings will contain your name or any other information that could be used to identify you.

You may choose whether or not to allow audio or video recordings during your session. Your decision will not affect your ability to participate in the study in any way. If you agree to participate, a member of the research team will confirm your verbal permission to record, and your response will be documented in the study's consent log.

III. VOLUNTARY PARTICIPATION

I have been informed that my participation in this research study is voluntary and that I am free to withdraw or discontinue participation at any time. My participation in this research study is completely voluntary. I can decide not to participate or withdraw from the study at any time without penalty or loss of benefits to which I am otherwise entitled. If I withdraw before completing the study, I may not receive the full compensation.

Instead of being in this research study, my choices may include: If I withdraw from this research study, I will not be penalized in any way for deciding to stop participating or lose any benefits to which I am otherwise entitled.

I have been informed that data collected for this study will be retained by the investigator for the length of the research and analyzed even if I choose to withdraw from the research. If I do choose to withdraw, the investigator and I will discuss my withdrawal, and the investigator may use my information up to the time I decide to withdraw.

IV. RISKS AND BENEFITS OF BEING IN THE STUDY:

The study involves the following foreseeable risks:

There is a potential risk of minor injury, such as tripping or bumping into an undetected object while navigating. There is also a minimal risk of a breach of confidentiality as data is collected and stored electronically. All personal information will be anonymized and stored on UMBC's secure cloud. Participants may feel slight stress while navigating in unfamiliar indoor environments or using the navigation system for the first time. This will be considered mitigated by providing a sighted assistant to ensure safety during the tasks. To reduce these risks, tasks will take place in a controlled environment, and a sighted assistant will be present to intervene if necessary.



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Benefits: There are no direct benefits to participants. However, your participation will contribute to research that may help improve indoor navigation technologies for people with visual impairments. The findings could lead to the development of more effective assistive technologies, enhanced accessibility, and improved navigation systems for future users.

V. COMPENSATION/COSTS:

Participants will receive a \$40 gift card as compensation for their time and participation in the study. This compensation will be provided at the end of the final study session.

VI. CONFIDENTIALITY:

Any information collected from this study that could identify you will remain confidential and will only be disclosed with your permission. The research team, including the principal investigator and authorized personnel, will take all reasonable measures to protect your privacy. All data will be stored securely on encrypted UMBC-approved cloud servers (e.g., Google Drive or OneDrive), and any physical materials will be kept in locked filing cabinets. Identifying information will be removed whenever possible, and the data will be coded using unique identifiers to ensure anonymity.

Audio or video recordings may be collected during navigation tasks for research analysis. These recordings will not include personal identifiers unless you provide explicit permission. If any identifiable recording is considered for use in a presentation, publication, or professional conference, your written permission will be obtained before use. These recordings will not be publicly shared or distributed for non-research purposes.

By participating, you agree that your de-identified data may be used for future research or publication, provided your identity remains protected. Any published results will be presented in aggregate form and will not include your name or personal information.

VII. CONTACTS AND QUESTIONS:

The principal investigators, **Tim Oates** and **Aydin Ayanzadeh**, have addressed all questions regarding my participation in this research study. If I have any further questions, I can contact:

Aydin Ayanzadeh
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Tim Oates



INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

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If I have any questions about my rights as a participant in this research study, I can contact the Office of Research Protections and Compliance at (410) 455-2737 or compliance@umbc.edu. All reports or correspondence will be kept confidential.

VIII. Participant Acknowledgement

You will be given a copy of this information sheet to keep for your records. The study has been explained to you, and you have had the opportunity to ask questions. Participation in this study is entirely voluntary, and you may withdraw at any time without penalty or loss of benefits to which you are otherwise entitled.

By stating that you agree to participate, you are giving your verbal consent. A member of the research team will document your response in a secure consent log.