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VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Information Sheet to Take Part in a Human Research Study

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Title of research study: "Lateral Control", IRB #22-864

Principal Investigator: Luke Neurauter, 540-231-1522, lnauraute@vti.vt.edu

Key Information: The following is a short summary of this study, which is sponsored by the National Highway Traffic Safety Administration (NHTSA), to help you decide whether to participate or not. Additional details are provided thereafter.

1. For this study you will be asked to drive a research vehicle on the Smart Road test track (Session 1) and on public roads throughout the New River Valley and surrounding areas (Session 2).
2. During these sessions you will experience lateral control systems (Lane Departure Warning, Lane Keep Assist), both in a controlled evaluation (Session 1) and during natural driving (Session 2).
3. We will ask you to provide feedback on your interactions with these features during your drive.

Why am I being invited to take part in a research study?

We invite you to take part in a research study because you are a licensed driver between the ages of 25-65 and in good health.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you participate is up to you. You can choose not to participate.
- You can agree to take part and later change your mind.
- If you decide to withdraw from the study, that will not be held against you.
- You can ask all the questions you want before you decide.

IRB Approval Date
VT IRB # _____

Why is this research being done?

This study will investigate how drivers interact with and use lateral control systems. We are interested in feedback about these interactions, such as perceived usefulness, preferences, and open suggestions. The results of this study will help guide future designs and development of similar features.

How long will the research last and what will I need to do?

1. We expect that your total participation in this research study will last approximately **9 hours**, divided into two sessions.
 - a. **Session 1** is expected to take approximately **3.5 hours**.
 - b. **Session 2** is expected to take approximately **5.5 hours**.
2. During Session 1, you will be asked to sign this consent form, complete a W-9 form for compensation purposes, complete a set of assessments, and drive a test vehicle on the VTTI Smart Roads for approximately 2 hours.
 - a. You will experience different lateral control assistance features and be asked to provide feedback via questionnaires administered by the experimenter.
3. During Session 2, you will be asked to drive the test vehicle on a predetermined public route that includes a variety of driving environments.
 - a. This route should take approximately two hours to complete, and you will perform two repetitions, for a total driving time of 4 hours.
 - b. You'll have the opportunity for a break at VTTI in between driving sessions.

More detailed information about the study procedures can be found under ***“What happens if I say yes, I want to be in this research?”***

Is there any way being in this study could be bad for me?

The risk of an accident that is normally present while driving and any risk present when driving a new and unfamiliar vehicle, on both a controlled test track and on public roads.

More detailed information about the risks of this study can be found under ***“Is there any way being in this study could be bad for me? (Detailed Risks)”***

Will being in this study help me in any way?

We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits include you finding the experiment interesting. Participation in this study will also contribute to a better understanding of driver expectations when interacting with these types of driver assist features.

What happens if I do not want to be in this research?

Participation in research is completely up to you. You can decide whether to participate or not to participate.

Detailed Information: This section provides more detailed information about this study in addition to the information listed above.

During Session 1 you will drive a vehicle on a closed-to-the-public test track at VTTI. You will be asked to drive at a moderate speed through the test track environment to test various lane departure warnings. An experimenter will be seated in the vehicle with you at all times and they can be notified if you don't want to continue or have an emergency. We'll ask you to provide feedback about the warnings experienced. The vehicle you drive is equipped with data collection equipment that records video and audio data. You may ask questions at any time during your orientation to the vehicle. After driving on the test track is completed you will be asked to complete a post-drive questionnaire before being compensated for your time. The research team will then schedule a time for you to complete Session 2.

During Session 2, you will be asked to drive a research vehicle on two repetitions of a prescribed public road route that will last approximately two hours each. During this drive you will not be accompanied by VTTI research staff. This route will begin and end at VTTI. During this session, we ask that you drive as you normally would, while following the prescribed route. Lateral control systems will be available during portions of the drive, and we are interested in your feedback associated with any interactions you might have with these systems.

After both Session 2 trips are completed, you will be asked to complete the final questionnaire(s), be compensated, and dismissed.

If you voluntarily agree to participate in this study, you will have the following responsibilities:

1. To follow the experimental procedures as well as you can.
2. To inform the experimenter if you have difficulties of any type.
3. To abstain from any substances that will impair your ability to participate.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, the Principal Investigator can be reached at 540 231-1522 or at ineurauter@vtti.vt.edu

This research has been reviewed and approved by the Virginia Tech Institutional Review Board ("IRB"). You may talk to them at 540-231-3732 or irb@vt.edu if:

- You have questions about your rights as a research subject.
 - Your questions, concerns, or complaints are not being answered by the research team.
 - You cannot reach the research team.
 - You want to talk to someone besides the research team to provide feedback about this research.

How many people will be studied?

We plan to include approximately 60 people in this research study.

What happens if I say yes, I want to be in this research?

During your participation, you will be asked to perform the following tasks:

Study Session #1: Driving on a test track.

1. Review this Informed Consent Form. Ask any questions you may have, sign the Informed Consent Form with the experimenter if you agree to participate.
2. Complete a Virginia Tech W-9 tax form. This is required by Virginia Tech in order to process compensation.
3. Complete the following assessments:
 - a. a hearing and vision assessment.
 - b. a color-vision assessment.
 - c. a pre-drive questionnaire.
4. You will drive a vehicle on a closed-to-the-public test track at VTTI.
5. You will be asked to drive a route at a moderate speed through the test track environment to test various lane departure warnings.
6. An experimenter will be seated in the vehicle with you at all times, and you can notify them if you don't want to continue or have an emergency.
7. We'll ask you to provide feedback about the lane departure warnings you experience during the drive.
8. At select times during your participation today you will be asked a series of questions about your experiences with the lane departure warning feature.
9. The vehicle you drive is equipped with data collection equipment that records video and audio data.
10. You may ask questions at any time during your orientation to the vehicle.
11. After driving on the test track is completed you will be asked to complete a post-drive questionnaire before being compensated for your time.
12. The research team will then schedule a time for you to complete Session 2.

Study Session #2: Driving on public roads.

1. Sign this Informed Consent Form, indicating agreement to participate in the second session.
2. You will be asked to drive a research vehicle on a prescribed public road route throughout the New River Valley and surrounding areas. This route will begin and end at VTTI.
3. You will drive the research vehicle on this route twice.
4. Each trip will last approximately two hours, for a total driving time of four hours.

5. During these drives you will not be accompanied by VTTI research staff. An experimenter will be monitoring your drive via a remote connection with the data acquisition system. The experimenter will be reachable as needed during this otherwise unsupervised drive.
6. During this session, we ask that you drive as you normally would, while following the prescribed route.
7. Lateral control systems will be available throughout portions of your drive, and we are interested in your feedback associated with any interactions you might have with these systems.
8. At select times during your participation in this session you will be asked a series of questions about your experiences with these features.
9. After both Session 2 trips are completed, you will be asked to complete the final questionnaire(s), be compensated, and dismissed.

We are collecting information about drivers' interaction with and their perceptions regarding these types of driver assist features. Any questions you answer will contribute to a better understanding of how these types of features may or may not provide benefits. Therefore, we ask that you answer truthfully to the best of your abilities.

What happens if I say yes, but I change my mind later?

1. You can leave the research at any time, and it will not be held against you.
2. Furthermore, you are free not to answer any questions or respond to experimental situations without penalty.
3. If you choose to withdraw, you will be compensated for the portion of time of the study for which you participated.
4. If you choose to withdraw, please inform the experimenter of this decision and they will provide you with transportation back to the building (Session 1), or you may simply return to VTTI mid-route (Session 2).

Is there any way being in this study could be bad for me? (Detailed Risks)

As a participant, you may be exposed to the following risks or discomforts by volunteering for this research:

1. The risk of an accident normally associated with driving an unfamiliar vehicle on a closed test track and on public roads at speeds ≤ 70 mph.
2. The risk of an accident normally associated with using new in-vehicle features. Some of the vehicle's features are designed to provide assistance to the driver under certain conditions; however, risks are not completely eliminated, and system malfunctions may occur.

In summary, the driving risks are similar to driving a rental car in an unfamiliar area.

There is an additional risk that you may experience fatigue due to the length of these driving sessions. The risks involved in completing the vision and hearing testing, study-related paperwork, and questionnaires are minimal.

The following procedures and safeguards intended to reduce the probability and magnitude of risk associated with this study include:

1. During session 1, an experimenter will be with you at all times and will ask you to stop if they feel the risks are too great to continue. When in the vehicle with you, the experimenter will have a mobile phone in case of an emergency.
2. During session 2, an experimenter will be monitoring your drive via a remote connection with the data acquisition system. The experimenter will be reachable as needed during this otherwise unsupervised drive.
3. You are allowed to take breaks or cease participation at any time without penalty.
4. You are required to wear a seatbelt.
5. You are required to obey the laws and regulations for driving on public roadways.
6. The vehicle is equipped with a driver's side and passenger's side airbag, curtain airbags, supplemental restraint system, fire extinguisher, and first aid kit.
7. You must refrain from driving the vehicle while impaired by any substances.
8. You should never fully rely on the on-board systems, but should exercise normal caution when operating the vehicle.
9. Both vehicles used in the study must pass a daily safety inspection checklist.
10. All data collection equipment is mounted such that, to the greatest extent possible, it does not pose a hazard to you in any foreseeable case.

11. While driving the vehicle, cameras will be in use. Due to this fact we ask you not to wear sunglasses unless absolutely necessary; however, if at any time you are suffering from glare problems and cannot see the roadway, sunglasses are recommended.
12. You should not use your cell phone during the study unless there is an emergency.
13. For session 1, testing will be held on dry pavement and during clear weather at or below typical highway speeds.
14. For session 2, weather will be monitored along the study route prior to each participant session. If there is a 50% or greater chance of continuous heavy rain, snow, or fog along the study route during the expected driving time, the session will be cancelled and rescheduled.
15. In the event of a medical emergency, or at your request, VTTI staff will arrange medical transportation to a nearby hospital emergency room.

What happens to the information collected for the research?

We will make every effort to limit the use and disclosure of your personal information, including participating in this research study, to people who have a need to review this information. We cannot promise complete confidentiality. Organizations that may inspect and copy your information include the IRB, Human Research Protective Program, and other authorized representatives of Virginia Tech.

Data gathered in this experiment will be treated with confidentiality. Shortly after participation, your name will be separated from your data. A coding scheme will be employed to identify the data by participant number only (e.g., Participant No. 1). You may elect to have your data withdrawn from the study if you so desire, but you must inform the experimenters immediately of this decision so that the data may be promptly removed.

Data samples collected during this research project, including video and audio data, will be made available to the sponsor solely for research-related demonstration purposes. The data collected will be retained indefinitely. Also, video and audio data that may identify you may be shown by VTTI staff or provided to NHTSA for research or reporting purposes such as presentations.

If identifiers are removed from your private information that are collected during this research, that information could be used for future research studies or distributed to another investigator for future research studies without your additional informed consent.

The results of this research may be presented in summary form at conferences, in presentations, reports, and/or academic papers.

Please check one of the following:

- VTTI has my permission to provide the digital video, including my image, to NHTSA, who has sponsored this research. I understand that NHTSA will only use the video for research-related demonstration purposes.
- VTTI does not have my permission to provide the digital video, including my image, to NHTSA, who has sponsored this research. I understand that VTTI will maintain possession of the video, and it will only be used for research-related demonstration purposes.

Can I be removed from the research without my OK?

The person in charge of the research study or the sponsor can remove you from the research study without your approval. Possible reasons for removal include following:

1. Equipment or instrumentation failure, change in weather or environment (unable to continue with session, etc.)
2. Participating in the second session requires completing the first session in full. If your first session is not completed, we would not be able to bring you back in for the second session.
3. If you are uncooperative (not following instructions), or observed to be driving in an unsafe manner, become impaired, etc.

What else do I need to know?

Participants in a study are considered volunteers, regardless of whether they receive compensation for their participation; under Commonwealth of Virginia law, workers compensation does not apply to volunteers;

therefore, if not in an automobile, the participants are responsible for their own medical insurance for bodily injury. Appropriate health insurance is strongly recommended to cover these types of expenses. For example, if you were injured outside of an automobile during the project, the cost of transportation to the hospital emergency room would be covered by your insurance.

In the event of an accident or injury in an automobile (during transport to and from the test site), the automobile liability coverage for property damage and personal injury is provided. The total policy amount per occurrence is \$2,000,000. This coverage (unless the other party was at fault, which would mean all expenses would go to the insurer of the other party's vehicle) would apply in case of an accident for all volunteers and would cover medical expenses up to the policy limit. For example, if you were injured in an automobile owned or leased by Virginia Tech, the cost of transportation to the hospital emergency room would be covered by this policy. Any coverage of the participant is limited to the terms and conditions of the insurance policy.

We will not offer to share your individual test results with you.

Study Compensation

All compensation will be issued using a pre-loaded MasterCard. Please allow up to 1 full business day for activation of the card. Once activated, this card cannot be used past its expiration date. The issuing bank will also begin deducting a monthly service fee of \$4.50 after three months of inactivity.

If you agree to take part in this research study, we will compensate you \$140 for completing Session 1 and \$220 for completing Session 2. Total maximum compensation for completing both sessions is \$360. Compensation is based off of the opportunity cost for your time in participating in the study.

If you choose to withdraw from the study, or the experimenter has to end a session early, you will receive compensation for the amount of time you have participated, at a rate of \$40 per hour rounded to the next half hour. All participants will receive at least \$40.

If compensation is in excess of \$600 dollars in any one calendar year, then by law, Virginia Tech is required to file Form 1099 with the IRS. For any amount less than \$600, it is up to you as the participant to report any additional income as Virginia Tech will not file Form 1099 with the IRS.

Signature Block for Capable Adult

Your signature documents your permission to take part in this research.

Session 1:

Signature of subject

Date

Printed name of subject

Signature of person obtaining consent

Date

Printed name of person obtaining consent

IRB Approval Date

Your signature documents your continuing permission to take part in this research.

Session 2:

Signature of subject

Date

Printed name of subject

Signature of person obtaining consent

Date

Printed name of person obtaining consent

IRB Approval Date