



Saving lives through research and education

Request for Proposals: Measuring takeover readiness in drivers of partially-automated vehicles

Topic Area: Emerging Technologies

Deadline: Monday, July 8, 2019, 5 PM EDT

Background

Advanced technology and vehicle automation are becoming more and more prevalent in vehicles, offering drivers new and enhanced safety and accessibility features. As automated vehicle technology progresses, the control of vehicles will be shared between drivers and the automated system, and the specific responsibilities of the driver and vehicle will vary from moment to moment in relation to traffic scenarios, roadway environments, and other factors. For these systems, safety will be highly dependent on drivers' monitoring the traffic environment and ability to quickly and effectively resume appropriate control when required, sometimes referred to as driver takeover.

Past research has demonstrated that driver monitoring of the traffic environment and automated systems can become degraded, and that driver takeover from automation can likewise be delayed, especially in instances in which the automated system performs in ways that the driver did not anticipate. The overall efficacy and timeliness of a takeover can be influenced by a number of situational factors. While there has been a lot of research focused on the timeliness of drivers' responses to takeover requests, much less consideration has been paid to drivers' readiness for a takeover. The current project seeks to operationalize the concept of driver readiness and to examine indicators and underlying measures related to driver readiness for resumption of control.

Objectives

The objectives of this project are to address the following questions:

- What measures and thresholds reliably indicate that a driver is effectively engaged in a monitoring task for lower levels of automation (i.e., ADAS)? What measures and thresholds reliably indicate that a driver is ready and capable of resuming control of a vehicle operating in automated mode (e.g., Level 3+)?
- What factors enhance or detract from this readiness?
- Considering these measures and thresholds, what is the effectiveness of different approaches to driver state monitoring and different types of feedback to the driver regarding system status and function?

Proposals may propose to address some or all of the questions listed above.

Methods

The AAA Foundation envisions that the objectives of this research could be met through multiple methods utilizing a variety of research tools, including but not limited to literature review and synthesis, and laboratory, simulation, and field evaluations. The AAA Foundation envisions that a project of the intended scale would likely take approximately 15-24 months to complete.

Suggestions for Proposal Content

Each year, AAA Foundation for Traffic Safety solicits proposals on traffic safety topics related to one or more of its four focus areas (Emerging Technologies; Vulnerable Road Users; Driver Behavior & Performance; and Roadway Systems & Drivers). Proposals will be evaluated based on criteria described below. Funding for selected proposals will be available beginning in January 2020. The body of your proposal should be no longer than five (5) pages (not including title page, CVs, appendices, or any budget information) and should contain the sections listed below. Failure to follow these instructions may result in the proposal being disqualified.

1. Title page:

- Title of the proposal.
- Names and affiliations of all investigators.
- Address, telephone number, and email of the primary investigator and/or the individual to whom correspondence regarding the proposal is to be addressed.
- An abstract, not exceeding 300 words.

2. Objectives

3. Approach:

Proposals should provide detailed description of the proposed project methods, the expected results, and potential limitations. When applicable, proposals must describe how subjects or respondents will be identified and recruited.

4. Timeline and supporting environment:

Describe the project timeline, where the activities/program(s) will take place, and what facilities and resources will be used (if applicable). Please present all timelines in terms of calendar year and month. For planning purposes, assume a January 7, 2020 start date and an end date of December 31, 2020 (or whatever appropriate end date, in cases of longer, multi-year project proposals). Note that actual dates will be determined at the contract agreement stage.

5. Evaluation of project process and deliverables:

Describe how specific objectives and project outcomes will be measured and evaluated.

Describe anticipated deliverables including final report(s), key meetings, etc. Note the final deliverable must include a complete report that fully describes the research effort and results, intended for publication on AAA Foundation for Traffic Safety's website.

6. Project budget request and indirect costs rates:

The AAA Foundation has an annual budget of a few million dollars to fund all projects. Only proposals of high quality and significance will be awarded.

Please include a detailed budget including indirect costs. Your proposal may provide multiple options for study designs that differ in scale and budget.

Please note that, for awarded contracts, invoices should be based on actual expenses linked to project deliverables. Progress reports will be required. All travel request line items should be documented and justified. Conference travel may or may not be justifiable depending on the purpose and scope of work.

The AAA Foundation is a charitable entity and is not committed to matching the indirect cost rates of the U.S. government or other entities. However, since the AAA Foundation has an important relationship with many universities and organizations to perform valuable projects, including (but not limited to) discovery research and intervention development/evaluation, universities and organizations can request a limited amount of indirect costs. Current allowable rates are:

- 0% rate for government agencies, other private foundations, and for-profit organizations;
- Up to a 20% rate for U.S. universities, U.S. colleges; and
- Up to a 25% rate for non-governmental organizations (NGOs).

Rates and limitations would be applied to both the primary applicant and any sub-grantees and subcontractors. Each respective organization may receive indirect costs up to the rate applicable to their organization. If a U.S. university is the primary contractor and includes an NGO as a subcontractor, the university can receive up to a 20% rate, while the NGO can receive up to a 25% rate for indirect costs. The rates provided above are the maximum rates allowed under the AAA Foundation's policy. A contractor with an actual indirect cost rate lower than the maximum rate provided above should not increase the funding request to the maximum allowed.

Evaluation Criteria

Proposals are assessed based on three criteria: (1) *innovation*, (2) *approach*, and (3) *team experience and supporting research environment*. Each criterion will be weighted (a proposal can be scored a maximum of 100 points). The following briefly describes some of the assessment questions posed for each criterion and the respective weight.

Criterion 1: Innovation (weight 1-20 points):

Does the applicant propose novel theoretical concepts, methods, instrumentation, or interventions? Is the proposed work expected to have impact on progress in the relevant fields and/or enhance programmatic initiatives?

Criterion 2: Approach (weight 1-60 points):

Does the application clearly respond to the RFP request (i.e., provide a concise background of the problem or area to be studied, clearly state the objective(s), etc.)? Are the overall strategy, methodology, and analyses well reasoned, technically sound, and appropriate to accomplish the objective(s) of the project? Have the investigators presented strategies to ensure an unbiased approach, as appropriate for the work proposed? Are potential problems, alternative strategies, and benchmarks for success presented? Is there appropriate discussion of the possible/potential results, what they may mean and how they will affect further work? Is the estimated work duration adequate to complete the work scope?

Criterion 3: Team Experience and Supporting Environment (weight 1-20 points):

Are the Principal Investigators (PIs) and proposed personnel well suited to the project? If the project is collaborative, do they have complementary and integrated expertise? Does the team have the necessarily skills and experience? Has the applicant demonstrated an ongoing record of accomplishments that have advanced the field? Are the institutional support, equipment, and other physical resources available to project personnel adequate for the project proposed?

Project budget requests will be assessed to determine whether they are appropriate for the work proposed. As noted above, a proposal may include multiple options for study designs that differ in scale and budget.

Proposal Format

Your proposal must meet the following formatting requirements:

- Use standard letter-sized page (8.5 x 11 inch), with at least one-inch margins on all sides.
- All text should be single-spaced and aligned to the left, in 12-point Arial font.
- Do not use any headers or footers, with the exception of page numbers.
- Do not use footnotes or endnotes.
- The body of the proposal (excluding title page, CVs, charts, appendices, and budget material) must not exceed five (5) pages.
- Please submit the proposal as a PDF.

Proposal Submission

Deadline: Monday, July 8, 2019, 5:00 PM EDT.

Submit your proposal electronically to RFP@aaafoundation.org

Please fill the subject line with “2020 Proposal.”

When sending your proposal to the AAA Foundation, please give your electronic files names that can help identify them. File names that include the last name of the principal investigator and a shortened title are preferred, such as:

Smith-NoviceDriverSupervisedPracticeHours.pdf

Smith-Appendix.pdf

Please do not use generic file names such as Proposal.pdf or AAA_Proposal.pdf.

Other Suggestions

The body of the proposal should be self-contained; it should be able to be understood by a reviewer without any supporting appendices.

Those who will be reviewing your proposal are knowledgeable about most major traffic safety topics. It is important that you demonstrate awareness and understanding of literature and ongoing research most relevant to your proposal; however, it is not necessary to provide an exhaustive review or cite statistics to convince reviewers that traffic safety (in general) is important. It is far more important for you to describe in detail what questions your proposal seeks to answer, how your project will accomplish tasks in a timely manner, what methods you will use, and how the results of your study will be used to achieve real-world improvements in traffic safety.

<h3><u>Questions</u></h3>

An FAQ document is available at this link , which includes common questions from previous years.
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If you have other questions, please email them to RFP@aaafoundation.org and fill the subject line "Questions." AAA Foundation will accept questions until 5:00 PM EDT, June 3, 2019. Answers to these questions will be posted on the AAA Foundation website no later than 5:00 PM EDT June 10, 2019.

About the Sponsor

Established in 1947 by the American Automobile Association, the AAA Foundation for Traffic Safety is an independent, publicly funded 501(c)(3) charitable research and education organization dedicated to saving lives by preventing traffic crashes and reducing injuries. The Foundation's mission is to prevent traffic deaths and injuries by conducting research into their causes and by educating the public about strategies to prevent crashes and reduce injuries when they occur. Additional information about the AAA Foundation for Traffic Safety can be found at www.aaafoundation.org.