

Investigating the effects of silent automation failure and scenario criticality on automated vehicle's takeover performance (03-036) Dataset

Dataset available at: <https://doi.org/10.15787/VTTI/C76VBC>

(This dataset supports report **Modeling Driver Behavior during Automated Vehicle Platooning Failures**)

This U.S. Department of Transportation-funded dataset is preserved by the Virginia Tech Transportation Institute (VTTI) in their data repository (<https://dataverse.vtti.vt.edu/>), and is available at <https://doi.org/10.15787/VTTI/C76VBC>

The related final report **Modeling Driver Behavior during Automated Vehicle Platooning Failures**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/59881>.

Metadata from the VTTI Repository record:

Dataset Persistent ID: doi:10.15787/VTTI/C76VBC

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Title: Investigating the effects of silent automation failure and scenario criticality on automated vehicle's takeover performance (03-036)

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Description:

- Project Description:
 - Research question:
 - Investigating the effects of silent automation failure and scenario criticality on automated vehicle's takeover performance.
 - Data Collection:
 - The study was conducted in July-August 2019 in the Texas A&M Transportation Institute (TTI) driving simulation lab. The lab consists of a Realtime Technologies Inc. (RTI) quarter-cab driving simulator with three screens that provide 165° horizontal and 35° vertical fields of view, a speaker system to provide ambient roadway noise, and a physiological and eye-tracking data collection suite.
- Data Scope:
 - The simulator collects kinematic time series data including steering wheel position, accelerator and brake pedal positions, velocity, time to lane crossing, time headway to an upstream object, and lane position at a 60 Hz sampling rate. The data was collected from 64 participants and included 4 experimental drives per participant. The driving simulator experiment used a 2×2×2 factorial design including a between-subjects factor of takeover request presence (silent vs.

alerted) and within-subjects factors of scenario criticality (critical vs. non-critical) and takeover scenario (obstacle reveal and unexpected braking).

- Data Specification:
 - Please see attached.

Subject: Engineering

Keyword: Driving simulation experiment, Driver behavior, Automated driving, Transfer of control, Silent failure, Platooning

Related Publication Alambeigi, H., McDonald, A.D. (2021). A Bayesian regression analysis of the effects of alert presence and scenario criticality on automated vehicle takeover performance. Human Factors: The Journal of the Human Factors and Ergonomics Society. In press.

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Roofigari-Esfahan, Nazila; Mollenhauer, Mike; White, Elizabeth; Vilela, Jean Paul Talledo, 2021, "Development of a Connected Smart Vest for Improved Roadside Work Zone Safety (04-104)", <https://doi.org/10.15787/VTT1/PMIRWK>, VTTI, V1

Dataset description:

This dataset contains 9 file collections and 1 .pdf file.

- 03-036_Data Specification.pdf
- SAFE-D Dataset_03-036_001.zip.001
- SAFE-D Dataset_03-036_002.zip.003
- SAFE-D Dataset_03-036_003.zip.003
- SAFE-D Dataset_03-036_004.zip.004
- SAFE-D Dataset_03-036_005.zip.005
- SAFE-D Dataset_03-036_006.zip.006
- SAFE-D Dataset_03-036_007.zip.007
- SAFE-D Dataset_03-036_008.zip.002
- SAFE-D Dataset_03-036_009.zip.002

File Type Descriptions:

- The .pdf file format is an Adobe Acrobat Portable Document Format (PDF) file and can be opened with the Adobe Acrobat software.
- The zip file is a compressed archive created with the various programs supporting ZIP compression. Microsoft Windows supports creating compressed zip files by default. You can create zip archives in Windows Explorer by using file context menu and Send to → Compressed folder (zip method). This will create zip file of any selected folder or files in your computer (for more information on .zip files and software, please visit <https://www.file-extensions.org/zip-file-extension>).

National Transportation Library (NTL) Curation Note:

As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (<https://doi.org/10.21949/1503647>) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at <https://doi.org/10.15787/VTT1/C76VBC> on 2022-04-29. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.