Multifront Approach for Improving Navigation of Autonomous and Connected Trucks Dataset
Dataset available at: https://doi.org/10.4231/2EEQ-3R20

(This dataset supports report **Infrastructure Enhancements for CAV Navigation,** https://doi.org/10.36501/0197-9191/20-008)

This U.S. Department of Transportation-funded dataset is preserved by Purdue University in The Purdue University Research Repository (PURR) (https://purr.purdue.edu/), and is available at https://doi.org/10.4231/2EEQ-3R20

The related final report **Infrastructure Enhancements for CAV Navigation**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/60753.

Metadata from the PURR Repository record:
Title:
Multifront Approach for Improving Navigation of Autonomous and Connected Trucks
Listed in: Datasets
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Description:
The project "Multifront Approach for Improving Navigation of Autonomous and Connected Trucks" have four different blocks.

- Block I: Real-Time Optimization
  - Includes traffic flow data
- Block II: Road Network Optimization of ACT Platoons
  - Optimization Model for platoons, finite element model for truck drag
- Block III: Resting Period and Pavement Damage
  - Finite Element models including different rest periods and lateral position
  - Experimental test data for permanent deformation of AC
- Block IV: Passive Sensing Paving Material
  - Data collected using induction-based eddy current sensor to estimate lateral position of vehicle

Please refer to each block for their respective data descriptions.

Recommended citation:
Al-Qadi I. L., Okte, E., Roesler, J. R., Meidani, H., Ouyang, Y., Dahal, S., Kazemi, A., Ramakrishnan, A., She, R. F., Ozer, H., Alrajhi, A. (2022). Multifront Approach for Improving Navigation of Autonomous and Connected Trucks. Purdue University Research Repository. https://doi.org/10.4231/2EEQ-3R20

Dataset description:
This dataset contains 1 .zip file, described below.

10_4231_2EEQ-3R20.zip:
- README.txt
- Bundle.zip
  - Ccat_logo_horizontal.png
  - Block 4.zip
    - This file collections contains 71 files, organized into multiple folders.
  - Block 3.zip
    - This file collection contains 1,718 files, organized into multiple folders.
  - Block 2.zip
    - Block 2 Folder
      - README_BLOCK2.pdf
      - Truck Platooning Network Folder
        - network.xlsx
        - cost_flow.xlsx
        - bilevel_model.xlsx
      - Aerodynamic Analysis Folder
        - Drag_ratio.xlsx
  - Block 1.zip
    - This file collection contains 105 files, organized into multiple folders.

File Type Descriptions:
Below are a number of the file types found within the file collection, however it is not a complete list. These were just some of the common files NTL staff noticed while reviewing the large number of files included with this dataset.
- The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.
- File extension png is commonly used for images in Portable Network Graphics file format. PNG is a bitmap graphics format similar to GIF, that uses image compression mainly for web purposes (for more information on .png files and software, please visit https://www.file-extensions.org/png-file-extension).

- The .fig file extension is associated with Fortran, a general-purpose, procedural, imperative programming language that is especially suited to numeric computation and scientific computing. (For more information on .fig files and software, please visit https://www.file-extensions.org/fig-file-extension).
- File extension .m is associated with the Objective-C, a general-purpose, object-oriented programming language based on Smalltalk language developed by Apple, Inc (for more information on the .m file type and associated software, please visit https://www.file-extensions.org/m-file-extension).
- The .mat file extension is associated with Ox. Ox is an object-oriented statistical system. At its core is a powerful matrix language, which is complemented by a comprehensive statistical library (for more information on the .mat file type and associated software, please visit https://www.file-extensions.org/mat-file-extension-ox-object-oriented-matrix-programming-language-matrix).
- The .py file extension is commonly used for files containing source code written in Python programming language. Python is a dynamic object-oriented programming language that can be used for many kinds of software development (for more information on .py files and software, please visit https://www.file-extensions.org/py-file-extension).
- The .csv, Comma Separated Value, file is a simple format that is designed for a database table and supported by many applications. The .csv file is often used for moving tabular data between two different computer programs, due to its open format. The most common software used to open .csv files are Microsoft Excel and RecordEditor, (for more information on .csv files and software, please visit https://www.file-extensions.org/csv-file-extension).
- The .pdf file format is an Adobe Acrobat Portable Document Format (PDF) file and can be opened with the Adobe Acrobat software.
- The .txt file type is a common text file, which can be opened with a basic text editor. The most common software used to open .txt files are Microsoft Windows Notepad, Sublime Text, Atom, and TextEdit (for more information on .txt files and software, please visit https://www.file-extensions.org/txt-file-extension).
- The .docx file is a Microsoft Word file, which can be opened with Word and other free word processor programs, such as Kingsoft Writer, OpenOffice Writer, and ONLYOFFICE.

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://ntl.bts.gov/public-access) 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/10.4231/2EEQ-3R20 on 2022-05-17. 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.