Real-Time Work Zone Traffic Management via Unmanned Air Vehicles Dataset

Dataset available at: https://doi.org/10.5281/zenodo.4270616

(This dataset supports report **Real-Time Work Zone Traffic Management via Unmanned Air Vehicles,** https://doi.org/10.5281/zenodo.4270659)

This U.S. Department of Transportation-funded dataset is preserved in the Zenodo Repository (https://zenodo.org/), and is available at https://doi.org/10.5281/zenodo.4270616

The related final report **Real-Time Work Zone Traffic Management via Unmanned Air Vehicles**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/58928.

Metadata from the Zenodo Repository record:

Title: Real-Time Work Zone Traffic Management via Unmanned Air Vehicles
Author: Malveaux, Charles; de Queiroz, Marco; Li, Xin; Hassan, Hany; He, Zewei
Description: Highway work zones are prone to traffic accidents when congestion and queues develop. Vehicle queues expand at a rate of 1 mile every 2 minutes. Back-of-queue, rear-end crashes are the most common work zone crash, endangering the safety of motorists, passengers, and construction workers. The dynamic nature of queuing in the proximity of highway work zones necessitates traffic management solutions that can monitor and intervene in real time. Fortunately, recent progress in sensor technology, embedded systems, and wireless communication coupled to lower costs are now enabling the development of real-time, automated, "intelligent" traffic management systems that address this problem. The goal of this project was to perform preliminary research and proof of concept development work for the use of UAS in real- time traffic monitoring of highway construction zones in order to create real-time alerts for motorists, construction workers, and first responders. The main tasks of the proposed system was to collect traffic data via the UAV camera, analyze that a UAV based highway construction zone monitoring systems would be capable of detecting congestion and back-of-queue information, and alerting motorists of stopped traffic conditions, delay times, and alternate route options. Experiments were conducted using UAS to monitor traffic and collect traffic videos for processing. Prototype software was created to analyze this data. The software was successful in detecting vehicle speed from zero mph to highway speeds. Review of available mobile traffic apps were conducted for future integration with advanced iterations of the UAV and software system that has been created by this research. This project has proven that UAS monitoring of highway construction zones and real-time alerts to motorists, construction crews, and first responders is possible in the near term and future research is needed to further development and implement the innovative UAS traffic monitoring system developed by this research.
Tran-SET Project: ITSOSU01
Publication Date: October 1, 2021
DOI: 10.5281/zenodo.4270616

Recommended citation:
Malveaux, Charles, de Queiroz, Marco, Li, Xin, Hassan, Hany, & He, Zewei. (2020). Real-Time Work Zone Traffic Management via Unmanned Air Vehicles [Data set]. Zenodo. https://doi.org/10.5281/zenodo.4270616

Dataset description:
This dataset contains 1 file described below.

19ITSOSU01_Data.xlsx:
The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

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/10.5281/zenodo.4270616 on 2022-05-05. 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.