

## **College Station Lane Marking Datasets: Datasets for evaluating the effectiveness of lane markings for lane detection (04-115) Dataset**

Dataset available at: <https://doi.org/10.15787/VTTI/5FGGKD>

(This dataset supports report **Reference Machine Vision for ADAS Functions**)

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/5FGGKD>

The related final report **Reference Machine Vision for ADAS Functions**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/60228>.

### **Metadata from the VTTI Repository record:**

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Title: College Station Lane Marking Datasets: Datasets for evaluating the effectiveness of lane markings for lane detection (04-115)

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#### Description:

- Project Description: The objective of this project is to develop a reference system for evaluating different lane markings and perception algorithms. This project validates the effectiveness of different types of lane markings for detectability on state-of-the-art lane detection (LD) algorithms. An in-depth study into the different parameters affecting the performance of LD algorithms was conducted by incorporating pavement marking material characteristics into the evaluation framework. The effect of environmental factors (Day vs Night), driving direction, lane marking material characteristics (reflective properties like Qd/RL, marking quality), lane making layouts (30ft gap vs 40ft gap, 4inch wide vs 6 inches wide), and LD evaluation characteristics (Type of LD algorithm, Near Field-of-view (FOV) vs Far FOV). Observations were made on how these different factors interact with each other and affect LD performance. 3 different annotated image datasets were also generated 1. College Station Dataset (On-road with Material data), 2. 3M panel dataset (Closed course with material data), and 3. US290 Dataset (On-road special type of markings without material data). These datasets can be used as a reference/benchmark system by researchers to evaluate their LD algorithms and how their performance relates to different types of lane markings and their material characteristics. The results obtained were presented in several conferences and poster sessions. The project also led to the publication of a technical paper and partly supported the thesis of a Ph.D. student.

- **Data Scope:** The video data in these datasets were collected by using a 5MP camera mounted on a standard test vehicle owned by Texas A&M University. The camera setup used was a Blackfly BFS-U3-51S5C-C camera sensor (Sony IMX250 CMOS - 5MP – USB3.1 camera) attached with a Kowa LM8HC Manual Iris C-Mount Lens f=8mm/F1.4 Lens. The color of the lane markings was evaluated using a spectrophotometer in the CIE 1931 x, y, Y, color space using illuminant D65 (representing daylight (ISO/CIE 10526)) and a 2-degree standard observer. Color measurements were conducted at multiple locations in each test area at locations that were representative of the test area. A combination of mobile and portable retroreflectometer was used to capture the pavement marking reflectivity values (Qd for daytime data, and RL for nighttime data). Lane marking material data (including color, Qd, and RL) were collected around the same time as the video data collection.

Subject: Engineering

Keyword: Autonomous Vehicles, Image Dataset, Lane Detection, ADAS, Pavement Markings, Lane Markings, Retroreflectivity

Related Publication: Nayak, A., Rathinam, S., Pike, A., and Gopalswamy, S., "Reference Test System for Machine Vision Used for ADAS Functions," SAE Technical Paper 2020-01-0096, 2020, <https://doi.org/10.4271/2020-01-0096>. <https://doi.org/10.4271/2020-01-0096>

Depositor: Atkins, Whitney

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**Dataset description:**

This dataset contains 25 files with an overall size of 81.8 GB. To access this dataset and see the full file list please visit <https://doi.org/10.15787/VTT1/5FGGKD>.

**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/VTT1/5FGGKD> on 2022-04-21. If, in the future, you have trouble accessing this dataset at the host repository, please email [NTLDataCurator@dot.gov](mailto:NTLDataCurator@dot.gov) describing your problem. NTL staff will do its best to assist you at that time.