



A Video Based Hierarchical Vehicle Classification System

Tech ID: 25252 / UC Case 2011-369-0

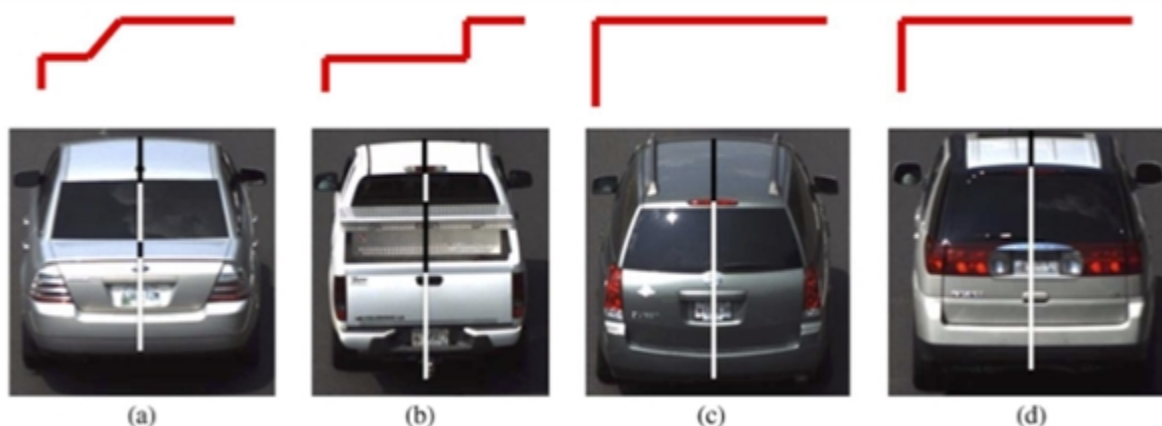
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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,239,955	01/19/2016	2011-369

IMAGES



The orange lines at the top show the canonical structures for different vehicles. Bottom pictures show the rear views of corresponding passenger vehicles (a) Sedan, (b) Pickup truck, (c) Minivan, and (d) SUV

FULL DESCRIPTION

Background

Transportation and vehicle classification systems are becoming smarter and more automated. For example, electronic toll collection systems have been introduced and drivers are not required to stop, eliminating road delays. New technologies have also been added to these systems that enable service providers to acquire data on the type of vehicles that are utilizing their amenities as well as vehicle identification for safety and control purposes.

Technology

UCR researchers have developed a method and system for vehicle classification using video imaging. The novel invention entails a vehicle ground clearance measurement along with a video camera that captures a travelling vehicle and categorizes it into a vehicle class. The method addresses an important challenge with current methods and systems - that of reliance on side views of the vehicle which can be easily obstructed by other vehicles.

ADVANTAGES

- ▶ Classifies vehicles into one of six classes: sedans, pickups, minivans, SUVs, buses and trucks
- ▶ Camera imaging of the rear end of vehicles for a more accurate classification

SUGGESTED USES

OTHER INFORMATION

KEYWORDS

vehicle classification system, vehicle identification, electronic toll system, automated classification system, ground clearance measurement, vehicle class, vehicle information, automatic parking payment system

CATEGORIZED AS

- ▶ **Imaging**
 - ▶ Other
 - ▶ Security
- ▶ **Security and Defense**
 - ▶ Other
 - ▶ Screening/Imaging
- ▶ **Sensors & Instrumentation**
 - ▶ Other
 - ▶ Physical Measurement
- ▶ **Transportation**
 - ▶ Automotive

RELATED CASES

2011-369-0, 2011-712-0, 2012-863-0, 2012-885-0

- ▶ Vehicle identification readers for toll roads – provides information on the type of vehicles that are using the tolls as well as an added security measure for violators
- ▶ Substitute parking attendants – automatic classification of vehicle for parking entrance & exit payment systems
- ▶ Other safety and control system products

RELATED TECHNOLOGIES

- ▶ [Rear View Vehicle Classification Using Computer Vision](#)
- ▶ [Vehicle Logo Identification in Real-Time](#)

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