



# A Video Based Hierarchical Vehicle Classification System

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## PATENT STATUS

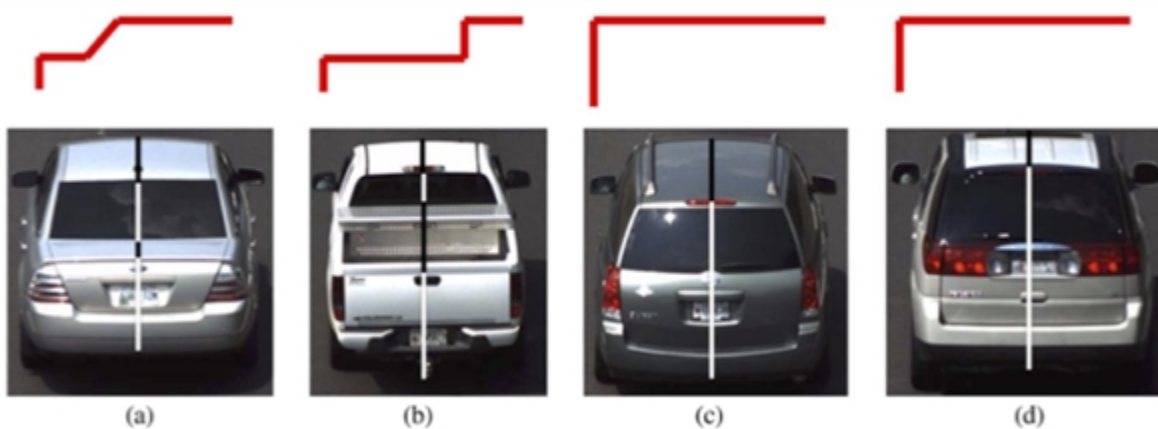
Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,239,955	01/19/2016	2011-369

## 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

## 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

## BRIEF 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 what type of vehicles are utilizing their amenities as well as vehicle identification for safety & control purposes.

### Brief Description:

UCR Researchers have developed a method and system for vehicle classification using video imaging. This novel invention entails a vehicle ground clearance measurement system along with a video camera that captures a travelling vehicle and categorizes it into a vehicle class. The cameras on current methods and systems rely on side views of the vehicle, which can easily be obstructed by other vehicles.

## ADVANTAGES

- Classifies vehicles into one of six classes: sedans, pickups, minivans, SUVs, buses and trucks

## 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

- ▶ Camera imaging of the rear end of vehicles for a more accurate classification

## SUGGESTED USES

- ▶ 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 Make and Model Identification](#)
- ▶ [Vehicle Logo Identification in Real-Time](#)

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