عنوان مقاله:

IRVD: A Large-Scale Dataset for Classification of Iranian Vehicles in Urban Streets

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خلاصه مقاله:

In recent years, vehicle classification has been one of the most important research topics. However, due to the lack of a proper dataset, this field has not been well developed as other fields of intelligent traffic management. Therefore, the preparation of large-scale datasets of vehicles for each country is of great interest. In this paper, we introduce a new standard dataset of popular Iranian vehicles. This dataset, which consists of images from moving vehicles in urban streets and highways, can be used for vehicle classification and license plate recognition. It contains a large collection of vehicle images in different dimensions, viewing angles, weather, and lighting conditions. It took more than a year to construct this dataset. Images are taken from various types of mounted cameras, with different resolutions and at different altitudes. To estimate the complexity of the dataset, some classic methods alongside popular Deep Neural Networks are trained and evaluated on the dataset. Furthermore, two light-weight CNN structures are also proposed. One with ۳-Conv layers and another with ۵-Conv layers. The ۵-Conv model with ۱۵۲K parameters reached the recognition rate of ۹۹.۰۹% and can process ۴۸ frames per second on CPU which is suitable for real-time applications.

کلمات کلیدی:

Vehicle Dataset, Vehicle Classification, deep learning, IRVD