

## 6D Posture Estimation of Road Vehicles from Color Images

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**Abstract :** Currently, in the field of object posture estimation, there is research on estimating the position and angle of an object by storing a 3D model of the object to be estimated in advance in a computer and matching it with the model. However, in this research, we have succeeded in creating a module that is much simpler, smaller in scale, and faster in operation. Our 6D pose estimation model consists of two different networks - a classification network and a regression network. From a single RGB image, the trained model estimates the class of the object in the image, the coordinates of the object, and its rotation angle in 3D space. In addition, we compared the estimation accuracy of each camera position, i.e., the angle from which the object was captured. The highest accuracy was recorded when the camera position was 75°, the accuracy of the classification was about 87.3%, and that of regression was about 98.9%.

**Keywords :** 6D posture estimation, image recognition, deep learning, AlexNet

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