

Knowledge transfer for vision system in autonomous driving

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Abstract: Computer vision is one of the key elements in the field of autonomous driving. Though LIDAR system demonstrates very high accuracy and reliability in certain situations, camera-based vision system is still necessary to let the vehicle intelligently understand the situations both inside and outside the car. It is widely accepted that if a task is provided large amount of training data, deep convolutionary neural network could have very high accuracy on this given task (sometimes even higher than human beings). However, for the autonomous vehicle, it could be very difficult in collecting the data for certain tasks, especially safety related tasks. Therefore, we transfer the knowledge learned in the other domains to improve the intelligence of the vision system for autonomous vehicles. Furthermore, we also review the cutting-edge technologies as well as our contributions dealing with highly imbalanced training data.

Bio: *Yandong Guo* is a researcher at Microsoft Research, Redmond WA in the United States. His research interests are mainly in the machine intelligence areas including computer vision and deep learning. He is one of the key contributors to the Microsoft cognitive service, and leads the computer vision effort for the connected car project. He also works on Microsoft image search and Microsoft Knowledge graph.

Yandong Guo earned his Ph.D. in electrical and computer engineering at Purdue University at West Lafayette, under the supervision of Prof. Charles Bouman and Prof. Jan Allebach. He serves as reviewer/committee member for conferences/journals including ICML, NIPS, ACM MM, ICIP, ICASSP, TIP, TCI, SPIE EI, IJCAI, ACCV etc.

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