

Automated End-to-End Pipeline Processing Solution for Autonomous Driving

Authors : Ashish Kumar, Munesh Raghuraj Varma, Nisarg Joshi, Gujjula Vishwa Teja, Srikanth Sambhi, Arpit Awasthi

Abstract : Autonomous driving vehicles are revolutionizing the transportation system of the 21st century. This has been possible due to intensive research put into making a robust, reliable, and intelligent program that can perceive and understand its environment and make decisions based on the understanding. It is a very data-intensive task with data coming from multiple sensors and the amount of data directly reflects on the performance of the system. Researchers have to design the preprocessing pipeline for different datasets with different sensor orientations and alignments before the dataset can be fed to the model. This paper proposes a solution that provides a method to unify all the data from different sources into a uniform format using the intrinsic and extrinsic parameters of the sensor used to capture the data allowing the same pipeline to use data from multiple sources at a time. This also means easy adoption of new datasets or In-house generated datasets. The solution also automates the complete deep learning pipeline from preprocessing to post-processing for various tasks allowing researchers to design multiple custom end-to-end pipelines. Thus, the solution takes care of the input and output data handling, saving the time and effort spent on it and allowing more time for model improvement.

Keywords : augmentation, autonomous driving, camera, custom end-to-end pipeline, data unification, lidar, post-processing, preprocessing

Conference Title : ICADDV 2023 : International Conference on Autonomous Driving and Driverless Vehicles

Conference Location : New York, United States

Conference Dates : June 05-06, 2023