

Title:

GPU-Accelerated Vehicle Detection for Roads

Journal:

Advanced Structures Materials, Volume 148, 2021

Document Type:

Book Chapter

Authors:

Abd Halim A.M.,
Ishak A.S.F.,
Abu Bakar M.H.,
Krishnan P.

Full text link:

<https://www.springerprofessional.de/en/gpu-accelerated-vehicle-detection-for-roads/19151360>

Scopus preview

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85105659891&doi=10.1007%2f978-3-030-67750-3_4&partnerID=40&md5=a8ab249383c9bb9a4cae6db8077d7947

Citation:

Abd Halim A.M., Ishak A.S.F., Abu Bakar M.H., Krishnan P.
GPU-Accelerated Vehicle Detection for Roads
(2021) Advanced Structured Materials, 148, pp. 35 - 46,
DOI: 10.1007/978-3-030-67750-3_4

Abstract:

Nowadays, as people's demands and lifestyles change the need for advancing the type of technology we use is high. Everything we used has been innovated to a better standard. Intelligent and autonomous vehicles are promising solutions to improve road safety, traffic problems, and passenger comfort in advanced driving assistant systems (ADAS). Such applications require advanced computer vision algorithms that require high-speed computers. In some cases, it is still a significant challenge to keep smart vehicles on the road right up to their destination, especially when driving at high speed. The first main task is robust navigation, often based on system vision, to obtain RGB road images for further processing. Depending on the position, speed, and direction of the vehicle, the second task is the dynamic control. This document presents precise and efficient road borders and an intelligent and autonomous vehicle detection algorithm for painted lines. It combines the Hough Transform and Canny edges detector to initialize the algorithm at every time necessary. Lastly, you only look once (YOLO), a new detection approach, is presented. Classifiers for the detection of objects are repurposed prior to work. We instead frame object detection into separate spatial boundaries and associated class probabilities as a regression problem.