

Distracted driver detection using compressed energy efficient convolutional neural network

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Abstract: The availability of techniques for driver distraction detection has been difficult to put to use because of delays caused due to lag in inferencing the model. Distractions caused due to handheld devices have been major causes of traffic accidents as they affect the decision-making capabilities of the driver and gives them less time to react to difficult situations. Often drivers try to multitask which reduces their reaction time leading to accidents, which can easily be avoided if they had been attentive. As such, problems related to the driver's negligence towards safety a possible solution is to monitor the driver and driving behavior and alerting them if they are distracted. In this paper, we propose a novel approach for detecting when a driver is distracted due to in hand electronic devices which is not only able to detect the distraction with high accuracy but also is energy and memory efficient. Our proposed compressed neural got an accuracy of 0.83 in comparison to 0.86 of heavyweight network.

Keywords: Machine learning, deep learning, convolutional neural network, CNN, distraction detection, model compression, pruning, quantization, deep compression

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