

Using transfer learning and model fusion method to detect distracted drivers

May 8 2023, by David Bradley



Credit: CC0 Public Domain

The World Health Organization (WHO), reports that well over 135 million people die worldwide in road traffic accidents each year and that the main cause of most accidents is driver distraction. Distractions such as using mobile phones and other gadgets such as navigation and sound

systems, talking to passengers, eating and drinking, all constitute risky behavior while driving. A system that can automatically detect such distracted driving and alert a driver to their risky behavior could reduce the risk of their being involved in or causing an accident.

A study in the *International Journal of Wireless and Mobile Computing* describes a more effective method of identifying distracted driving behavior. The [technology](#) has the potential to improve driver safety systems and reduce the number of [road traffic accidents](#) that occur when drivers are not giving their full attention to the road ahead and other vehicles, pedestrians, and hazards in their path. Conventional approaches have proven complex or too subjective, but the proposed method uses a combination of transfer learning and model fusion to overcome the various issues.

Guantai Luo and Wanghui Xiao of the Fujian (Quanzhou)-HIT Research Institute of Engineering and Technology, Xinwei Chen of Minjiang University, Jin Tao, and Chentao Zhang of Xiamen University, in Fujian, China, used two pre-trained deep convolutional neural network models, ResNet18 and ResNet34, to extract features from images of drivers. They then fine-tuned these models to produce four deep convolutional neural network models which they could fuse using a stacking method to create a fusion model.

They then tested the accuracy of their fusion model in recognizing distracted driving behavior using a fivefold cross-validation method. Their results showed that the new model had an accuracy of 95.47%. This is a significant improvement over traditional methods that use a single network model, indicating a higher level of generalization performance and recognition accuracy.

More information: Chentao Zhang et al, Distracted driving behaviour recognition based on transfer learning and model fusion, *International*

Journal of Wireless and Mobile Computing (2023). [DOI: 10.1504/IJWMC.2023.10055501](https://doi.org/10.1504/IJWMC.2023.10055501)

Provided by Inderscience

Citation: Using transfer learning and model fusion method to detect distracted drivers (2023, May 8) retrieved 4 May 2024 from <https://techxplore.com/news/2023-05-fusion-method-distracted-drivers.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.