

A Transfer Learning Approach for Identification of Distracted Driving

Ikromjanov Kobiljon Komil Ugli*, Ali Hussain*, Beom Su Kim*, Satyabrata Aich*, Hee-Cheol Kim**

*Institute of Digital Anti-Aging Healthcare, Inje University, South Korea

** Department of Computer Engineering/Institute of Digital Anti-Aging Healthcare/u-HARC, Inje University, South Korea

kobiljonikromjanov@gmail.com, alihussain.dream@gmail.com, beomsu91@naver.com, satyabrataaich@gmail.com, heeki@inje.ac.kr

Abstract— In recent years, the number of motor vehicle traffic crashes is rising around the world. According to the United States National Highway Traffic Safety Administration (NHTSA), the main cause of road fatalities and injuries is distracted drivers. Driver distraction is a specific sort of driver interference on the roadway. In this case, a deep learning-based system can detect and distinguish the source of distractions in real-time, to avoid traffic accidents and make better transport safety. This paper attempts to develop the system using transfer learning and fine-tuning methods with different model architectures. Various pre-trained weights were used with fine-tuning to improve accuracy and implemented using Mobile Net, VGG16, and ResNet50 models. Finally, the results illustrate that transfer learning on Mobile Net with frozen layers is the best model out of three models getting 99% (495 out of 500) of accuracy on the test dataset images.

Keyword— Distracted driver, deep convolutional neural networks, transfer learning, fine-tuning, pre-trained model.



Ikromjanov Kobiljon Komil Ugli, is a master student at the Institute of Digital Anti-Aging Healthcare, Inje University. He has received his Bachelor degree in computer engineering from South Korea. He has worked in many real-life projects related to artificial intelligence. His research interests are artificial intelligence, Machine learning, big data, machine vision, Internet of Things.



Ali Hussain, is a master student at the Institute of Digital Anti-Aging Healthcare, Inje University. He has received his Bachelor degree in computer engineering from Pakistan. He has worked in many real-life projects related to artificial intelligence. His research interests are artificial intelligence, Machine learning, big data, machine vision.



Beomsu Kim, is a master student at the Institute of Digital Anti-Aging Healthcare, Inje University. He has worked in many real-life projects related to artificial intelligence. His research interests are artificial intelligence, Machine learning, big data, text mining



Satyabrata Aich, is working as a Lecture at the Institute of Digital Anti-Aging Healthcare, Inje University. He has published many research papers in journals and conferences in the realms of Machine learning, Text mining, and Artificial intelligence. His research interests are natural language processing, Machine learning, supply chain management, Text mining, Bio informatics, and Blockchain.



Hee-Cheol Kim, received his BSc at Department of Mathematics, MSc at Department of Computer Science in SoGang University in Korea, and PhD at Numerical Analysis and Computing Science, Stockholm University in Sweden in 2001. He is Professor at Department of Computer Engineering and Head of the Institute of. Digital Anti-aging Healthcare, Inje University in Korea. His research interests include Machine learning, Text mining, Bio Informatics