Context

There are various means of transportation such as planes, cars, and trains. In the United Kingdom, transportation by road has become the most popular means of movement (Akimura, 2015). This has led to a rise in the number of cars on the road with multiple accidents occurring daily. According to GOV. UK (2020), there were about 14266 reported accidents involving vehicles in 2018. There have been many attempts to reduce road accidents such as the introduction of traffic lights and traffic signs. With recent advancements in technology, the current method being research on and implemented is the advanced driver assistance systems (ADAS) (Swathi and Suresh, 2017). The ADAS supports the driver by automatically detecting traffic signs, recognising speed limits, detecting lane lines with the help of sensors and cameras installed in the car (Swathi and Suresh, 2017). Traffic sign serves as a guide to safeguard pedestrians, vehicles, and nearby buildings from impending danger.

This study aims at detecting and classifying traffic signs using machine learning (ML) algorithms. For this to be accomplished, the following research questions were developed: (a) Which dataset are used for traffic sign detection and classification? (b) Which ML algorithms have been used for traffic sign detection and classification? (c) Which of the identified algorithms will be best suited for traffic sign detection and classification?

(a) Which dataset are used for traffic sign detection and classification?

There are various dataset used for traffic sign detection such as German traffic sign recognition benchmark (GTSRB) dataset (Stallkamp, et al., 2012), German traffic sign detection benchmark (GTSDB) dataset (Houben, et al., 2013), and Belgium traffic sign dataset (BTSD) (Mathias, et al., 2013).

Reference

1. GOV.UK. (2020) *Reported accidents, vehicles and casualties (RAS40).* Available at: <https://www.gov.uk/government/statistical-data-sets/ras40-reported-accidents-vehicles-and-casualties>. [Accessed 1st July 2020].
2. Akimura, S. (2015) ‘Transportation statistics that can contribute to policies and social infrastructure development aimed at ensuring the healthy growth of cities and providing support for smooth economic activity’. *IATSS research*. 39(1) pp.9-18.
3. Swathi, M. & Suresh, K.V. (2017) ‘Automatic traffic sign detection and recognition: A review’. *International Conference on Algorithms, Methodology, Models and Applications in Emerging Technologies (ICAMMAET).* pp.1-6.
4. Stallkamp, J., Schlipsing, M., Salmen, J. & Igel, C. (2012) ‘Man vs. computer: Benchmarking machine learning algorithms for traffic sign recognition’. *Neural Networks*. 32, pp.323-332.
5. Houben, S., Stallkamp, J., Salmen, J., Schlipsing, M. & Igel, C. (2013) ‘Detection of Traffic Signs in Real-World Images: The {G}erman {T}raffic {S}ign {D}etection {B}enchmark’*. International Joint Conference on Neural Networks (IJCNN)*. pp.1-8.
6. Mathias, M., Timofte, R., Benenson, R. & Van Gool, L. (2013) ‘Traffic sign recognition - How far are we from the solution?’. *In The 2013 international joint conference on Neural networks (IJCNN).* pp.1-8.