Pedestrian's Controlling on Zebra using Multi-Layer Image

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Abstract: *The improvement of road safety is considered as a top priority on the agendas of governments and transport policy making stakeholders worldwide, with the 'Vision zero' target being the pinnacle of the European Commission's road safety strategy. Increased attention has been given to pedestrians, since crashes involving this vulnerable user group, have a higher mortality rate. As a result, research focusing on the behaviour of pedestrians and on the application of Intelligent Transport Systems that will assist pedestrians, is of increased importance. This project attempts to predict pedestrian behaviour on crossings with a Countdown Signal Timer (CST), through the application of a machine learning algorithms. In the frame of the case study presented, an intersection in the simulated environment model, where countdown signal timers have been installed on the pedestrian traffic lights, is analyzed. For the needs of the analysis two models were implemented, a X-Convolutional Neural Network (X-CNN) and a Decision making. Results of both models indicated a satisfactory performance. In detail, the X-CNN model managed to estimate the pedestrians' crossing speed with a Mean Squared Error value. The accurate determination of pedestrians' crossing behaviour could not only underline the influence of countdown signal timers, but also highlight appropriate countermeasures that can make infrastructure safer for this user group to alert them on the speaker with appropriate messages.*

Keywords: Decision Making, Cross- Convolutional Neural Network (X-CNN), Machine Learning, Countdown Signal Timer (CST)

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