

Deep Learning based Screen Display Fault Detection System for Vehicle Infotainment Applications

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Modern vehicles are integrated with in-vehicle infotainment systems and are subject to software faults. This paper explores the application of deep learning algorithms to identify visual defects in infotainment systems and document the issue automatically. A framework that is capable of operating in real-time is deployed and delivers immediate feedback on detected defects. The proposed system performs thorough analysis, automatically summarizes detected defects and generates detailed reports. This significantly reduces the manual effort required for documentation and supports quicker decision-making processes. The performance of the developed models is evaluated using convolutional neural networks (CNN) and artificial neural network (ANN) classifiers. The experimental results demonstrate the superior performance of the CNN model, achieving an accuracy of 82.21% and an F1 score of 0.85 during training and 80.51% accuracy and an F1 score of 0.811 during testing. In comparison, the ANN model provides a training accuracy of 70.18% with an F1 score of 0.7314 and a testing accuracy of 69.32% with an F1 score of 0.705.

Keywords: *Convolution neural network, display, fault identification, infotainment system, text summarization.*