ABSTRACT

Manual estimation of damages in fields like vehicular accidents has been the mainstay of the insurance business. However, such methods are replete with biases and inaccurate estimations. This paper deals with estimating car damage, primarily with insurers as our key potential customers. For this purpose, three distinct Transfer Learning approaches are used which detect the presence of damage, location, and severity of the damage. The basis for algorithms used lies in Convolutional Neural Networks, customized to optimize accuracy. Each approach is analysed and varying degrees of accuracy were achieved across different models deployed ranging from 68% to 87%. Accuracy as high as 87.9% was obtained during the course of experiments. This research fine-tunes a number of existing approaches and opens doors for collaboration in image recognition, particularly for the car insurance domain. The rapidly expanding automobile industry highly backs the equally fast-growing auto insurance market. Although until now this industry has been solely based on traditional ways to make repair claims. In case of an unfortunate accident, the claims for the car damage needs to be filed manually. An inspector is required to physically analyse the vehicles to assess the damage and obtain a cost estimate. Automating such a process with the help of machine learning and remote usage would make the process a lot more convenient for both sides of the damage, increasing productivity of the insurance carrier and satisfaction of the customer. While the technology is yet to achieve the highest possible levels of accuracy, above is a proof of concept of the application of Deep Learning and Computer Vision into automating the damage assessments by building and training Convolution Neural Networks.