**Intelligent Vehicle Damage Assessment and Cost Estimator for Insurance Companies**

**ABSTRACT**

Nowadays, a lot of money is being wasted in the car insurance business due to leakage claims. Claims leakage Underwriting leakage is characterized as the discrepancy between the actual payment of claims made and the sum that should have been paid if all of the industry's leading practices were applied. Visual examination and testing have been used to may these results. However, they impose delays in the processing of claims.

The aim of this project is to build a model that can detect the area of damage on a car. The rationale for such a model is that it can be used by insurance companies for faster processing of claims if users can upload pictures and the model that can assess damage be it dent or scratch from and estimates the cost of damage. This model can also be used by lenders if they are underwriting a car loan, especially for a used car.

**INTRODUCTION**

For a very long time, managing finances for insurance in time for accidents has been a real problem. In time of accidents , for the accident party, the long waiting time at the accident site, the slow payment process, the unreasonable fixed price and other issues, to a certain extent, reduce customer satisfaction with the insurance company. In addition, the potential dangers of traffic congestion and secondary accidents caused by small-scale cases also bring a great pressure to the traffic control department.. Despite this, modern technology and the internet's increasing accessibility have given it a new viewpoint during the past few decades. We can estimate cost by identifying the part of the vehicle which has been damage during the time of accident. By learning the major and minor parts of the vehicle we can assess the vehicle damage and estimate the cost for insurance.

We can track our cost estimate of our insurance with the use of an expense tracker. It is a web-based program that can monitor their damage and ascertain the allotted insurance budget. The necessary information, including the pictures of the damaged vehicle, additional details, and date of the accident must be entered by potential users. This mobile system is a comprehensive expense tracking tool that will not only assist users in keeping tabs on their spending but also reduce unnecessary time spending, hence promoting a responsible lifestyle.

**LITERATURE REVIEW**

**Introduction**

This chapter will be focusing on the work or research that are related either directly or indirectly to this project. This part is very important for the development of the project as it works as a guideline. It is an evaluative report of studies found in the literature that related to the selected area. Besides, by studying and understanding the researches, it will help in determining the best approach for the system development.

**Related Research And Technique**

Some research and journals have been reviewed throughout this project to make out a distinct image of it. At present, under the guidance of the new generation of information technology, the rapid accumulation of data, the continuous improvement of computing power, the continuous optimization of algorithm models, and the rapid rise of multi-scene applications have made profound changes in the development environment of artificial intelligence. In this paper, based on the demand of automobile insurance claims and intelligent transportation, combined with abundant basic data and advanced machine vision algorithm, an intelligent damage determination system of 'Artificial Intelligence + Vehicle Insurance' is constructed. This paper first introduces the functions of the intelligent damage assessment system. Secondly, it discusses the realization path of each functional module in detail, and finally puts forward the vision for the future. According to August 22, 2018, 'China Banking and Insurance Regulatory Commission Office on the Monitoring of Small Claims Insurance Services in 2017' data show that: In 2017, 55.4113 million automobile insurance claims were settled normally. Among them, there are 40.128 million small-scale cases, accounting for 72.22%. The average insurance payment period for small-scale automobile insurance cases is 11.8 days, while the claim period for investigation, damage assessment and claim collection accounts for 9.94 days. These data have triggered several reflections on small-scale cases: Firstly, for insurance companies, 72.22% of small cases require the presence of damage fixers, which leads to high cost of risk investigation, and the leakage problem in the process of damage fixing is difficult to control. Secondly, for the accident party, the long waiting time at the accident site, the slow payment process, the unreasonable fixed price and other issues, to a certain extent, reduce customer satisfaction with the insurance company. In addition, the potential dangers of traffic congestion and secondary accidents caused by small-scale cases also bring a great pressure to the traffic control department. In the claims industry under the new generation of AI development plan, how can insurance companies move towards a new business model of 'Artificial Intelligence + Scene Application'? Deep convolutional neural networks [1, 2] have led to a series of breakthroughs for image classification [3]. With the development of deep learning [4], the process of computer vision has been greatly accelerated. Research on visual recognition is undergoing a transition from feature engineering to network engineering [5]. With the continuous innovation of AI algorithms and the increasing level of learning, open source deep learning framework and platform have become an important driving force for the development of AI. The improvement of hardware computing power ensures the rapid development of AI. At the same time, the massive data of the automobile insurance industry provides abundant raw materials for network model training. Therefore, we have enough data support and algorithm model to explore the new model of 'Artificial Intelligence + Vehicle Insurance' and build an intelligent damage determination system. Such a new model can not only effectively control the cost expenditure of automobile insurance companies, but also improve the owners' compensation experience. At the same time, it can effectively alleviate road traffic pressure and avoid traffic congestion and secondary accidents.

**Related System**

Insurance company Ageas is using artificial intelligence (AI) to assess damage to vehicles through photographs supplied by the policyholders making claims. Ageas customers in the UK can submit photographs as they report accidents, via smartphones and can get decisions on their next steps within minutes and in some cases while they are on their initial phone call to the insurer. This is being made possible through computer vision and machine learning technology which look at digital photographs of damaged cars and quickly estimate the repair cost. The latest development in insurance technology (insurtech) promises to cut the time and costs associated with processing claims and makes it simple for the customer to report them. Computer vision, along with machine learning techniques used by Tractable, will make quick decisions and estimates on repair costs. The technology was trialled last year and Ageas now plans to roll it out to resolve thousands of claims every month

**Conclusion**

In conclusion, the selection of accurate technique is very important to make sure that the system successfully implemented and achieved the objective. The selected technique is artificial intelligence that can be able to predict the vehicle damage correctly. Based on the research study, it can be conclude that deep learning works is suitable for Cost Estimator.

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