LITERATURE SURVEY

INTELLIGENT VEHICLE DAMAGE ASSESSMENT AND COST ESTIMATOR FOR INSURANCE COMPANIES

INTRODUCTION

In today's world, Vehicles are increasing heavily. Because of increasing the vehicles, accidents are very common because the peoples are driving a car very fastly on the road. The people claim the money for repair the car through vehicle insurance when the accident happens. Because of incorrect claims, the company behaves badly and doesn't make payments currently. This happens due to claims leakage, the claims leakage refers to the difference between the amounts secured by the company to the amount that company should have secured based on the claims. Still the damage to the car is examined clearly and it will take more time to claim the process according to the company policy. Although the company does one's best to speed up the claiming process delay. Differentiate the proposed system that is maybe speed up the car damage that can be check in process. Just by sending the image containing a damaged car and can system performs car damage detection in a minute rather than hours if it is inspected visually. The system can utilizes machine learning approach as well as computer vision to decide the damage analysis, location of the damage as well as severity of the damage.

THE FUNCTIONS OF INTELLIGENT DAMAGE ASSESSMENT SYSTEM

Intelligent damage determination system can be used to determine the appearance damage of vehicles in small cases. The system completes the whole process of survey and damage determination through four functions. They are:

(1)Accident investigation: Photographs of target vehicles and multiple trio vehicles were taken and uploaded, intelligent recognition, information input, intelligent recognition and event finalization are completed in accident investigation.

(2)Intelligent image damage assessment: image damage assessment is achieved by intelligent component recognition and intelligent damage recognition.

(3)Damage result output: Damage results including maintenance scheme recommendation and maintenance price recommendation are automatically given according to damage recognition results.

(4)Vehicle insurance anti-fraud: In the process of fixing the damage, the anti-fraud screening of vehicle insurance is completed by means of image fraud recognition and logical detection.

THE REALIZATION PATH OF INTELLIGENT DAMAGE ASSESSMENT SYSTEM

Accident Investigation : Accident investigation module includes the photography of certificates and vehicle photos, the intelligent recognition of certificate photos and the intelligent stereotyping work based on the basic information data of vehicle accessories.

Take Photos: The photographs taken in the accident investigation of intelligent damage determination system include driving license (front and side pages), driving license (front and side pages), person-car photograph, vehicle corner photograph and vehicle damage photograph. In order to apply the photograph of vehicle damage to the image damage based on artificial intelligence image recognition algorithm, some shooting requirements are put forward:

Intelligent ID Recognition.: For the photos of the uploaded driving license (front and side pages), driving license (front and side pages) and other documents, the intelligent damage determination system embedded OCR recognition technology. The VIN code, license plate number, engine number, driver's name and other information of the uploaded driving license and driver's license can be intelligently recognized and filled in.

Intelligent Stereotyping and Fixing: The advantages of intelligent loss determination system are also reflected in its abundant basic information data. Through VIN code, the basic information database of vehicles and accessories can be automatically linked to realize the output of specific vehicle information such as brand, vehicle system, vehicle type, and OE code of parts corresponding to vehicle type, so as to realize one-to-one correspondence between vehicles and accessories.

Intelligent Image Damage Assessment : The core of intelligent damage fixing products is to determine which kind of damage happened to the exterior parts of the vehicle by image. The system has been experimented many times in the development of intelligent image damage algorithm. Finally, it divides the problem into three parts: the recognition of appearance parts by image, the recognition of damage parts by image, and the determination of damage parts by relative position relationship.

. Vehicle Appearance Component Recognition Algorithms : According to the statistics of vulnerable parts in vehicle accidents, thirty-one vehicle exterior parts have been identified in this product. Each part is divided into front and back parts, regardless of left and right parts. Aiming at the recognition of 31 vehicle appearance parts (regardless of left or right), the recognition algorithm for panoramic or local vehicles is realized, in the complex environment of rain and snow, too strong light or dark, by using the self-built data set of vehicle appearance parts and the depth learning target detection algorithm.

Damage Recognition Algorithms for Vehicle Appearance Components.: This product is aimed at six types of vehicle appearance damage, and also applies the deep learning target detection method. Through the self-built damage data set, it can recognize high-light pictures, low contrast pictures and multi-category mixed damage. The damage recognition algorithm AP50 is 87.6%.

An Algorithm for Locating Components and Damages: By calculating the intersection relationship between the polygon identified by the algorithm of vehicle appearance components and the rectangular position identified by the algorithm of appearance damage, the appearance parts where the damage occurs are finally determined. At present, based on vehicle appearance component recognition algorithm, vehicle appearance damage recognition algorithm and image position determination algorithm, the comprehensive accuracy of image damage determination algorithm reaches 87.3%.

Output of Loss Assessment Result : The output of fixed-loss results can not be separated from maintenance rules and repair logic. Among them, the maintenance rules are based on the experience of fixing damage and testing the appearance of components in the specific material damage needs to be maintained. The repair logic needs to formulate the damage inclusion relation logic, for example, if there are two damages in the same component, the maintenance scheme should adopt the scheme with higher maintenance level.

CONCLUSION

In the future, we will continue to explore the innovation of insurance technology of 'AI + Vehicle Insurance'. We hope that we can use the power of intelligent damage determination system. On the one hand, the owner can take photos by one click to achieve rapid loss determination, price estimation and immediate compensation. On the other hand, it assists insurance companies to achieve rapid and accurate pricing in the process of fixing losses and claims. Finally, by combining the rapid compensation of accident vehicles to relieve traffic pressure, to avoid more serious personal and property losses caused by secondary accidents