

INTELLIGENT VEHICLE DAMAGE ASSESSMENT AND COST ESTIMATOR FOR INSURANCE COMPANIES

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I. INTRODUCTION

In today's world, it can be observed that the number of vehicles we use is quickly expanding; let's agree that there isn't a single street without a car. As a result, an increase in the number of automobiles on the road may lead to an increase in the percentage of accidents occurring nearby; additionally, the number of accidents occurring nearby would be significant; the accidents would not be particularly serious, but the automobile would be damaged, prompting people to file insurance claims.

The whole idea focuses on this question: how can a customer claim insurance more quickly? To keep the procedure quiet, a machine learning model is developed that utilizes image processing to categorize the photographs and calculate the percentage of damage to the car. The user will be able to get payment based on the model's outcomes. Because the ML model would be exclusively

II. LITERATURE SURVEY

Li Ying & Dorai Chitra, presented the **CNN Model** for the auto insurance claims process, improvements in the First Notice of Loss and rapidity in the investigation and evaluation of claims could drive significant values by reducing loss adjustment expense. This paper proposed a novel application where advanced technologies in image analysis and pattern recognition are applied to automatically identify and characterize automobile damage. Success in this will allow some cases to proceed without human adjusters, while others to proceed more efficiently, thus ultimately shortening the time between the first Notice of Loss and the final pay-out. To investigate its feasibility, they built a prototype system which automatically identifies the damaged area(s) based on the comparison of ages. Performance of the before- and after-accident automobile in of the prototype system has been evaluated on images taken from forty scaled model cars under reasonably controlled environments, and encouraging results were obtained. It is a belief that, with the advancement of **image analysis and pattern recognition** technologies, their proposed idea could evolve into a very promising application

III. METHODOLOGY

To begin, it gathers the photographs of one's damaged automotive, which then feed into the machine learning model, which uses image processing to identify the elements of the image, and then uses image processing to analyses the percentage of damage to the automobile.

The next it divides the photographs into two categories, as illustrated in the block diagram: replace and repair. If the damage percentage exceeds, say, 80%, the damaged part must be replaced, however if the damage percentage is less than 80%, it computes the compensation amount depending on the damaged percentage. Create a thorough report based on our examination of the vehicle and use it to file a claim with the insurance provider for payment.

IV. PROPOSED SYSTEM

In proposed system firstly, it collects the pictures of one's damaged automobile, later use these pictures to feed into our ML model that makes use of image processing to identify the details of the image, using Image processing it analyses the percentage of damage of the automobile.

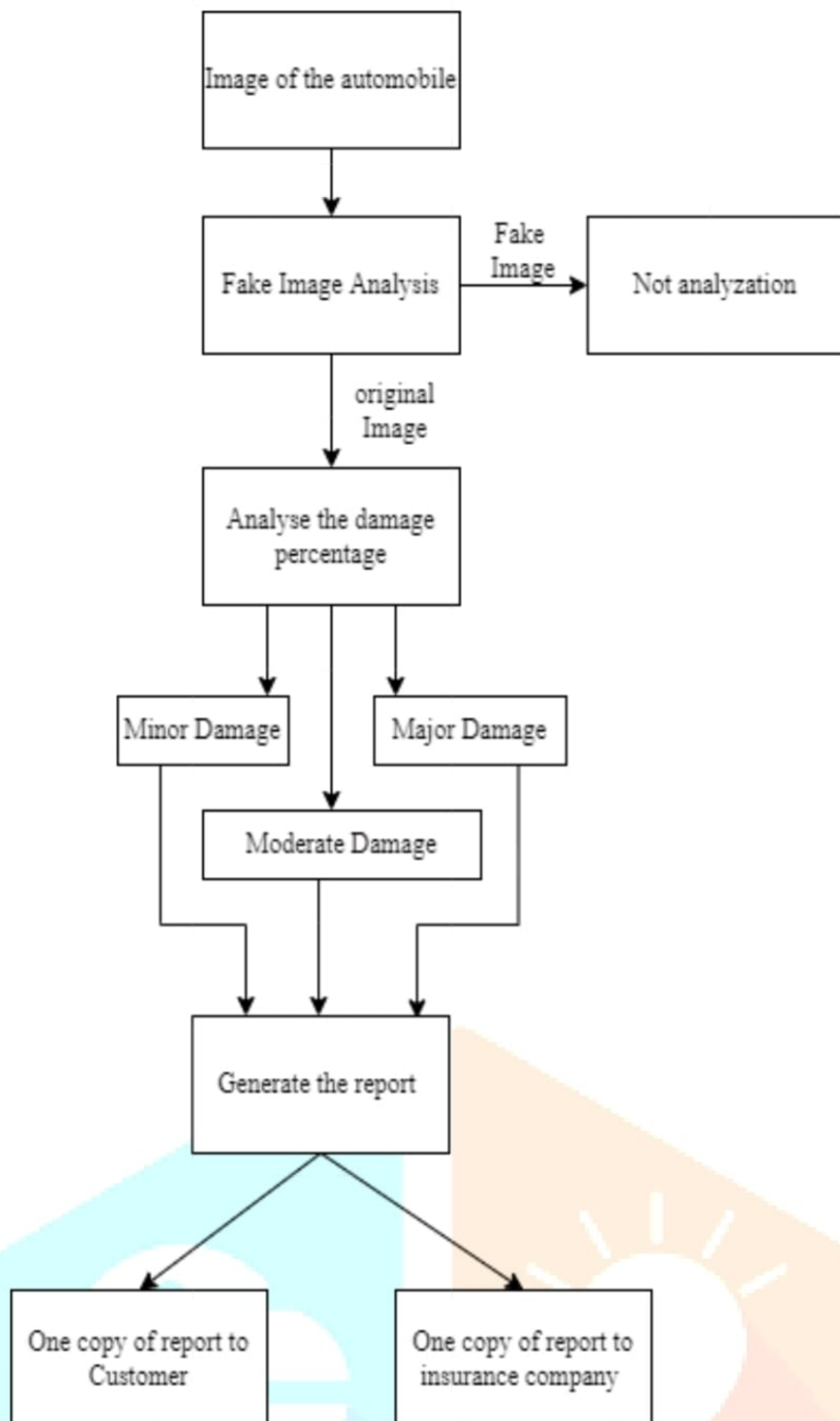
Next, it segregates the pictures based on 2 factors which are replace and repair. i.e. if the damage percentage exceeds say 80% then the damaged part has to be replaced, whereas in the other case "Replace" even in this case it calculates the reimbursement amount based on its damaged percentage.

Then at last it generates a detailed report on analysis of the automobile and use this to claim one's reimbursement with the insurance company.

V. IMPLEMENTATION

The analysis of car damage model accepts an input image from an user in JPEG format and processes it across different stages, the project is divided into 2 phases, to identify the damaged car that is, if the car is damaged or not, and then to find the location of damage like front, rear or back. The analysis can be achieved using steps that include image classification and object detection.

In image classification, it processes and classify the image provided by the user into either damaged car or a whole car i.e., undamaged or completely fine. Whereas, object detection and image localization come into picture to help us identify the location of the damage. It can predict the location along with the class for each object using Object Detection.



VI. ADVANTAGES

1. It can categorize the proportion of damaged parts and determine whether they need to be replaced or repaired.
2. It aids the user in expediting the process of filing an insurance claim for his vehicle.
3. Get a report with the vehicle's damage analysis created for you. To get compensation, submit the created report. Process that saves time and money.

VII. CONCLUSION AND FUTURE WORK

In this work of Damage analysis of a vehicle in general and insurance reclaim, a system has been designed using CNN and image classification which takes the input from a user as an image to test the severity of damage, which happens in a sequence of two steps. First being the image classification, here the input provided by the user is processed by the neural network to identify the car that is if the car is damaged or not. and later on the second step, the flattened input obtained as the output in step 1 is applied for object detection to identify the region and severity of damage, where region might be rear, front or side and severity is divided into minor, moderate and major. The R-CNN network identifies the severity of damage and a report is filed and sent to the user and the insurance firm.

VIII. REFERENCE(S)

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THANK YOU