IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 5, May 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205313 |

A Novel Approach to Intelligent Damage Determination System using AI

Dr. U. Nilabar Nisha[1], Praveen Kumar J[2], Ananth E[3], Praveen Kumar K[4], Shamsudeen S[5]

Head of the Department, Department of Computer Science and Engineering, Mahendra Institute of Engineering and Technology, Namakkal, Tamil Nadu, India[1]

Student, Department of Computer Science and Engineering, Mahendra Institute of Engineering and Technology, Namakkal, Tamil Nadu, India[2 3 4 5]

ABSTRACT: 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's is constructed. This paper first introduce the functions of the intelligent Damage assessment system. Secondly, it discuss the realization path of each functional module in detail and finally puts forward the vision for the future.

I. INTRODUCTION

At present, underneath the sterage of the new generation of data technology, the rapid accumulation of information, the continual improvement of computing power, the continual optimization of rule models, and therefore the fast rise of multi-scene applications have created profound changes within the development surroundings of computer intelligent transportation combined with copious basic information and advanced machine vision rules, an Associate in nursing intelligent injury determination system of "Artificial Intelligence + Vehicle Insurance" is made.

II. RELATED WORK

A.METHODOLOGY

The aim of this project is to build a VGG16 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 pics and the model can assess damage (be it dent scratch from and estimates the cost of damage especially for a used car and bikes

B.DATA COLLECTION

Data Gathering collect a diverse dataset of vehicle images containing various types and severities of damage. And Annotation manually label these images with bounding boxes or segmentation tasks to indicate the locations and type of damage present.

C.DATA PREPROCESSING

Data preprocessing is a image preprocessing standardize image sizes, color, spaces, and orientations for consistency and data augmentation augment the dataset using techniques like rotation, flipping, scaling and adding noise to increase model robustness.

D.MODEL SELECTION

Choose a model for select a suitable pre_trained deep learning model for object detection or semantic segmentations, such as Faster R-CNN,YOLO(you only look once) or Mask R-CNN. Adaptation fine_tune the chosen model on the annotated vehicle damage dataset to specialize it for damage detection

E.EVALUATION

Validation assess the model's performance on the validation set using metrics such as precision, recall, F1-score and mean average precision. And fine-tuning adjust model architecture or training parameters based on validation results to improve performance.

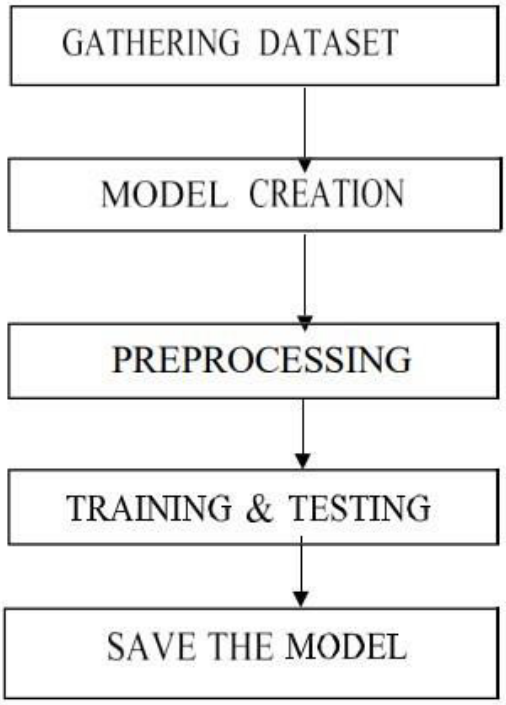
International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205313 |

F.WORKFLOW DIAGRAM



III. PROPOSED ALGORITHMS

A. Convolutional Neural Network (CNN)

Convolutional Neural Network (CNN) is a type of deep learning algorithm designed specifically for processing structured grid-like data such as images or audio. CNNs are structured in a hierarchical way, mimicking how the human brain processes visual information. CNNs leverage parameter sharing and spatial hierarchies, allowing them to efficiently learn complex patterns and hierarchies within data. The training process involving forward propogation, calculating loss, and backpropogation

B.Visual Geometry Group-16

VGG16 The Vgg-16 architecture is a deep convolutional neural network renowned for its effectiveness in image classification tasks. Developed by the Visual Geometry Group at the University of Oxford, VGG-16 consists of 16 layers, predominantly comprising convolutional layers followed by maxpooling layers. At its core, VGG-16 processes an input image through a series of convolutional operations. Each convolutional layer applies learnable filters to extract hierarchical features, capturing details ranging from simple edges and damages in earlier layers to more complex patters and object parts in deeper layers.

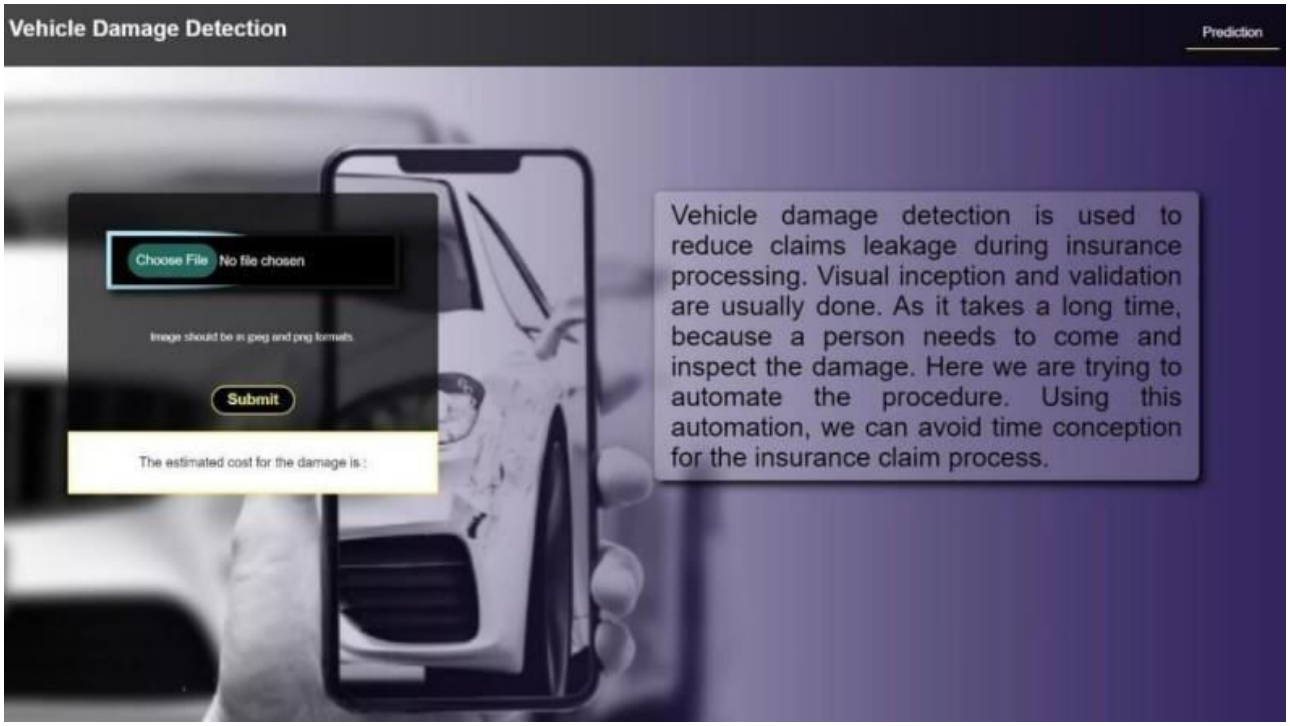
International Journal of Innovative Research in Computer and Communication Engineering

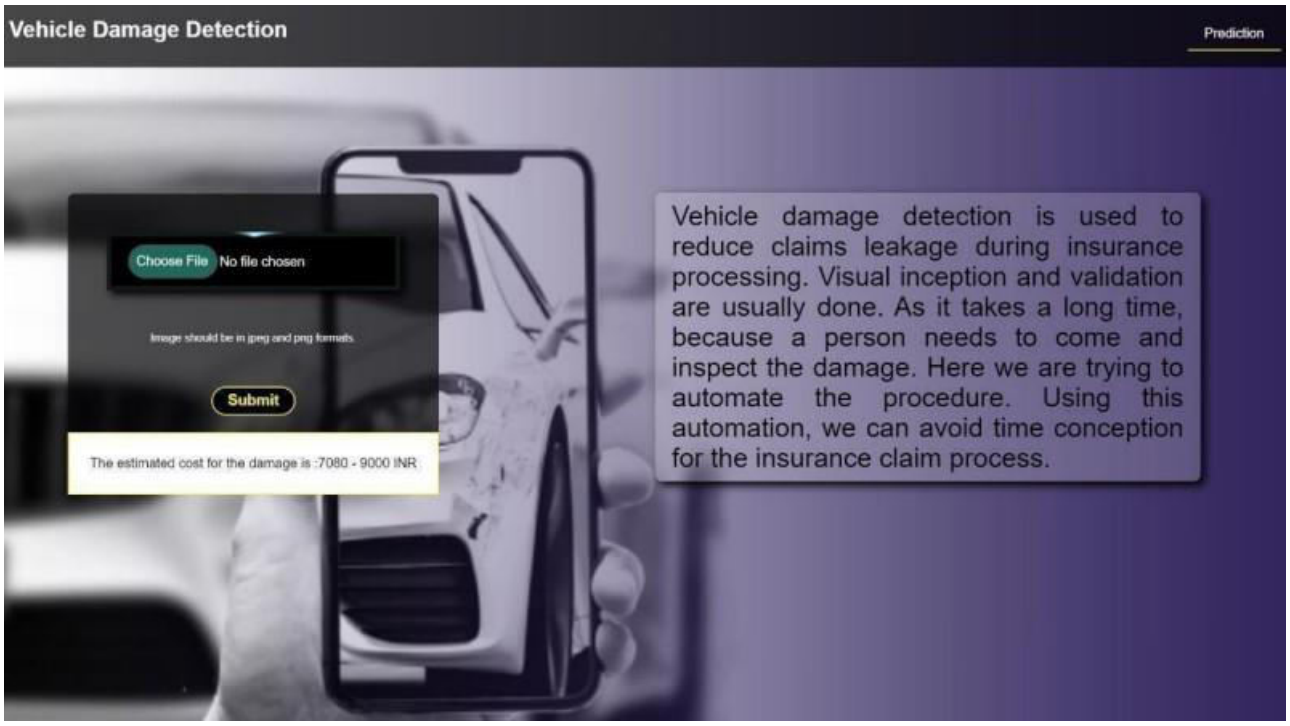
| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205313 |

IV. RESULT





V. CONCLUSION AND FUTURE ENHANCEMENT

In conclusion, AI and its related technologies will have a seismic impact on all aspects of the insurance industry, from distribution to underwriting and pricing to claims. Advanced technologies and data are already affecting distribution and underwriting, with policies being priced, purchased, and bound in near real time. An in-depth examination at what insurance may look like in 2030 highlights dramatic changes across the insurance value chain. The experience of purchasing insurance is faster, with less active involvement on the part of the insurer and the customer. Enough

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205313 |

information is known about individual behavior, with AI algorithms creating risk profiles, so that cycle times for completing the purchase of an auto, commercial, or life policy will be reduced 44 to minutes or even seconds. Auto and home carriers have enabled instant quotes for some time but will continue to refine their ability to issue policies immediately to a wider range of customers as telematics and in-home Internet of Things (IoT) devices proliferate and pricing algorithms mature. Many life carriers are experimenting with simplified issue products, but most are restricted to only the healthiest applicants and are priced higher than a comparable fully underwritten product. As AI permeates life underwriting and carriers are able to identify risk in a much more granular and sophisticated way, we will see a new wave of mass-market instant issue products

REFERENCEs

1.Qianqian, Zhu, et al. "Research on intelligent vehicle damage assessment system based on computer vision." Journal of Physics: Conference Series. Vol. 1518. No. 1. IOP Publishing, 2020.
2.Tan, Hong, et al. "Automatic emergency braking (AEB) system impact on fatality and injury reduction in China." International journal of environmental research and public health 17.3 (2020): 917.
3.Zhang, Wei, et al. "Automatic Car Damage Assessment System: Reading and Understanding Videos as Professional Insurance Inspectors." Proceedings of the AAAI Conference on Artificial Intelligence. Vol. 34. No. 09. 2020.
4.Kyu, Phyu Mar, and KuntpongWoraratpanya. "Car damage detection and classification." Proceedings of the 11th international conference on advances in information technology 2020
5.Zhu, Xianglei, et al. "A unified framework of intelligent vehicle damage assessment based on computer vision technology." 2019 IEEE 2nd International Conference on Automation, Electronics and Electrical Engineering (AUTEEE). IEEE, 2019.
6.Dhieb, Najmeddine, et al. "A very deep transfer learning model for vehicle damage detection and localization." 2019 31st International Conference on Microelectronics (ICM). IEEE, 2019..

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INNO SPACE SJIF Scientific Journal Impact Factor

doi crossref

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details