

## INDIVIDUAL CONTRIBUTION REPORT

### CAR DAMAGE IDENTIFICATION MODEL

SWAYAMDIPTA SAHA

1705837

**Abstract:** The aim of this project is to build a custom Mask R-CNN 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 they can assess damage from them. This model can also be used by lenders if they are underwriting a car loan especially for a used car.

**Individual contribution and findings:** It has been a great journey, developing this amazing project and I have been fortunate enough to contribute to two of the most integral parts of this project which are as follows:

i. My first task was to develop and train a model which can detect whether the given car image uploaded by the user is an image of a damaged car or not. With the help of our previous models developed, I proceeded further. I first filtered the warnings, configured the variables and loaded the base VGG16 model with weights and then excluded the top dense layer. After successfully loading then I encoded the labels using Label Encoder, then saved the features, labels and then the models and weights. I applied Logistic Regression machine learning algorithm to model the probability of a certain class or event existing such as car is damaged/not. Then I imported the features and labels and split the data-set into train and test data-sets. Next, I created the model and evaluated the model of test data and then obtained the accuracy which came out to be 89.94%. After importing the necessary packages and loading the trained Logistic Regression classifier, I tested and loaded a sample image of a damaged car and got the required results. My model was predicting correctly with a good accuracy.

ii. To build a chatbot using Dialogflow. Chatbot is a program that can conduct an intelligent conversation. It should be able to convincingly simulate a human behaviour and pass the Turing test. Dialogflow (formerly Api.ai, Speacktoit) is a Google-owned developer of human-computer interaction technologies based on natural language conversations. I used dialogflow to develop the chat-bot application and successfully integrated the chat-bot with our Car Damage web portal. The main purpose of building the chat-bot is to provide the user a better UI and interactive web page. This chat-bots contains some basic functionalities like Car care tips, Car Damage Support, Helpline number, Car driving safety measures etc.

**Individual contribution to project report preparation:** I have been fortunate enough to contribute to two of the most integral parts of this project i.e,

i. In the Implementation phase of the report I have given the detailed description of my model that I had developed to classify image whether car is damaged or not. I have presented proper screen-shots of the packages I used in developing the model along with the snapshots of obtained Accuracy which I represented using Seaborn Heatmap. At the end I have shared the screenshot of the model predicting the image result.

ii. My second contribution is representing the Architectural View Decomposition Procedural Design/Diagram. I have designed and represented the Use-Case Diagram and Activity Diagram of our project. This diagrams represents how a user would interact with our web portal and what are the funtionalities available to the user and their flow.

iii. My third contribution is representing the way Dialogflow is used in this project in building the chat-bot successfully. Dialogflow (formerly Api.ai, Speaktait) is a Google-owned developer of human-computer interaction technologies based on natural language conversations. I mentioned the mechanism of how I used dialogflow to develop the chat-bot application and successfully integrated the chat-bot with our Car Damage web portal.

### **Individual contribution for project presentation and demonstration:**

Coming to the presentation and demonstration part, I have contributed in preparing the introduction, objective and the abstract behind developing this project. I have also contributed in designing the presentation in terms of styling and customization. I have demonstrated the same to our project evaluator. I have demonstrated, that what's our main aim behind developing this project and what we are trying to achieve with this. I have also demonstrated the part I have contributed in this project as mentioned earlier i.e Car Image Damage Check model and my chatbot application which I have built using Dialogflow successfully.

Full Signature of Supervisor:

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Full signature of the student:

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