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## **Point of impact as a predictor of cause of incidence in motor claims.**

In this article, we will examine the relationship between the primary point of impact (POI) and the cause of incidence. In any incident involving a motor vehicle, POI is an important determinant for Insurance claims.

### **Definitions:**

*Point of Impact* is defined as the exact or most likely point where two/more vehicles or objects in question make contact and create the force of impression. The force further dissipates around the mean point of impact.

### *Types of damage*

*Scratch* is damage where any panel or part experiences a force of friction leading to peeling of surface paint of the panel or part. *Dent* is damage, where a portion of the panel, usually a metallic panel, deforms upon impact and creates a crater of sorts on the panel. *Broken part* - When a part falls off upon impact or breaks up completely upon impact or when a part pops off the skeleton structure of the vehicle, it is termed as a broken part. *Total loss* is damage when the entire front of the vehicle is impacted in an incident and there is extensive damage to the engine and engine compartment.

### **Use of technology in point of impact assessment.**

The POI assessment is done to understand the severity of damage caused by a specific incident, to infer the point of impact that caused the said damage and the spread of it to other parts of the vehicle, and to act as a predictor of the cause of the incident. With the advent of technology, Artificial Intelligence (AI) can be utilized to pinpoint the cause of the incident to assign liability during the motor claims process. POI assessment comes under the field of advanced image processing and analysis systems along with AI, more specifically related to the field of computer vision using deep learning and neural networks and analysis.

### **Why is the point of impact determination a necessity?**

As the number of vehicles on the road keeps increasing, the number of accidents keeps rising every year. In many countries, the person who caused the crash must pay for the damage to the victim including medical costs, lost earnings, assets damage, and suffering. The person cannot claim his insurance, as he is at fault. Hence it is very important to determine the point of impact and cause of incidence so that the person at fault can be assigned liability.

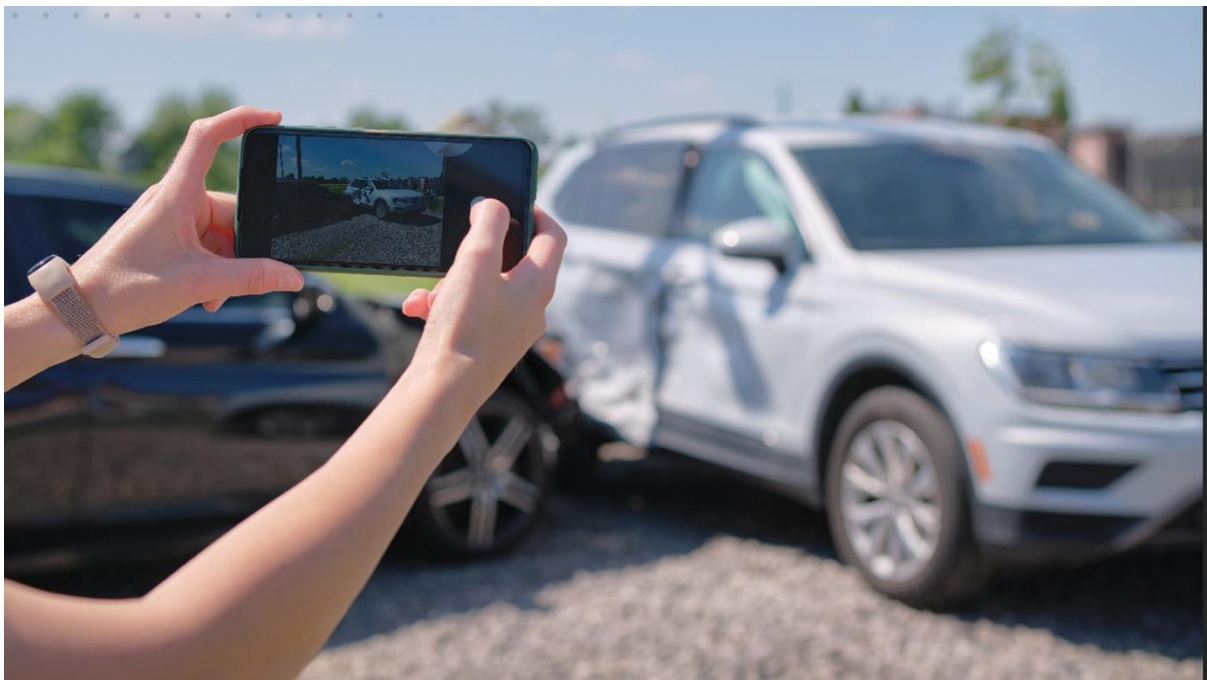
### **The traditional approach vs the new approach.**

Existing technology depends on human intervention and understanding of the written words of a claim applicant as submitted to the insurer. This can lead to aggravation of damages by the insured to cover pre-existing damages. The relevant source is the First Notice of Loss (FNOL) which is not a reliable, objective method to determine the point of impact and cause of incidence.

The current method using AI-powered visual inspections, pioneered by damage assessment platforms like CamCom, involves image processing and analysis. This relates to a computer vision-based process to determine the primary point of collision and thereof its primary point of impact on a vehicle. The system processes multiple images captured at the site of the accident and AI algorithms determine the extent of damages across the exteriors of the vehicle. The correlation of the damages detected from different images forms the basis of the prediction of the cause of incidence.

### **How does the new approach work?**

A series of up to 8 images of a vehicle is submitted as input. The AI system breaks down the vehicle image into its unique parts/features and assesses damages against each part with a severity rating and damage type associated with the same. It further looks at the correlation of the parts damages to the various angles of the vehicle and the underlying neural network predicts the prospective primary point of impact. This method further utilizes a grid-based mechanism for damage correlation for a part using multiple angles of images of the part and a unique scoring mechanism to determine the potential cause of incidence and associated damages.



Guided visual inspections through AI camera models which operate in automatic mode to ensure the quality of collected images and the inspection results.

## **What is the process of the new approach?**

The process flows like this –

1. Image Capture: Images of the vehicle from different angles are captured for analysis,
2. Identify the object of interest: Through computer vision extract only the required object of interest from the captured images,
3. Vehicle damage analysis: Identification and classification of damaged parts using deep learning,
4. Grid-based analysis: A scoring system to correlate damages from multiple angles and identify specific areas within the part in which the damage is present, and
5. Algorithm to arrive at the point of impact to predict the cause of the incident - The final step is an aggregation to predict the point of impact based on various features analysed in the previous components.

The causes of incidents are debatable and vary based on the circumstance that often cannot be recreated or have recurring behaviour. The advantage of the new approach is that computer vision-based analysis helps to eliminate human error and preconceived ideas that may colour judgment.