

## A leading US-based Fortune 100 P&C insurer develops AI-led blueprint for automated claims adjudication



Estimating claims auto damages and repair costs for client by leveraging Computer Vision (AI) on the vehicle images leading to simplified and accelerated claims processing and resolution, reducing human touch.



# The Background

Our client is a leading US-based Fortune 100 Personal Lines insurance carrier in the US processing thousands of Auto Physical Damage (APD) claims monthly. The current claims evaluation process requires manual review of vehicle damage images or a physical inspection of the vehicle. The process is lengthy, inefficient, and often leads to poor customer experience due to a high cycle time. Further, estimating the repair costs based on manual reviews is subjective and can suffer from adjuster bias.

Introducing AI-powered Computer Vision techniques in the claims settlement process can automate the evaluation of vehicle damage and the estimation of repair costs. This will enable faster and more efficient claim handling and settlement, while minimizing human intervention.

Can an **AI led damage assessment and estimation** help our client achieve a low or no touch claims process?

## Key Challenges

- Challenge 1: Identifying the high impact computer vision use cases requires multi-faceted approach, and balance must be achieved between business priorities and ground realities
- Challenge 2: Identifying the right mix of **data science and engineering skills** to execute the prioritized use cases requires deep experience and expertise
- Challenge 3: **Specialized tech infrastructure** needs to be setup, that can support the computationally intensive nature of image analytics

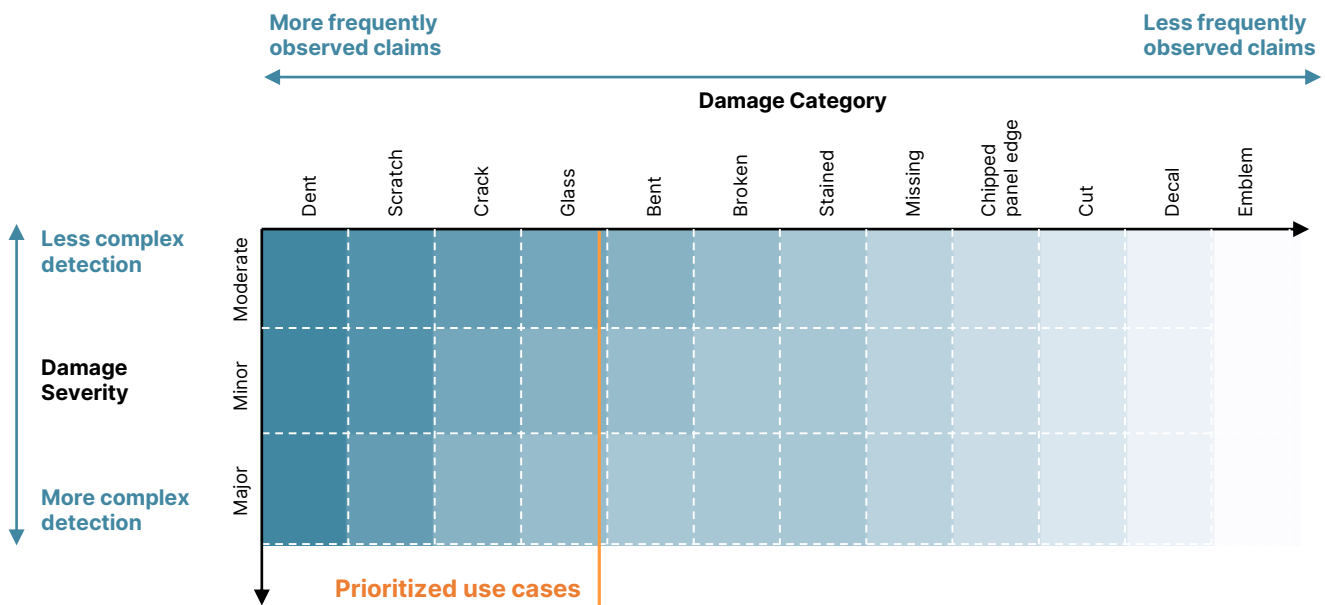


# Our Solution

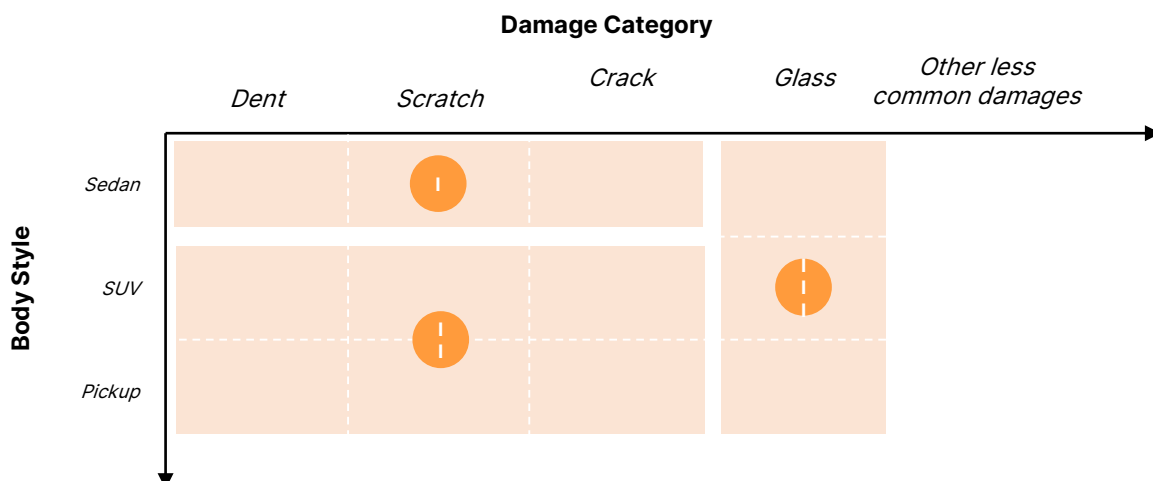
**Step 1:** Use case development: 100+ use cases identified through a combination of the 3 primary drivers of repair costs – damage category, accident severity, and vehicle body type

**Step 2:** Use case prioritization: 36 high priority use cases (12 for each body style) were identified, focusing on the most frequently observed damage categories, and combining with the damage severity

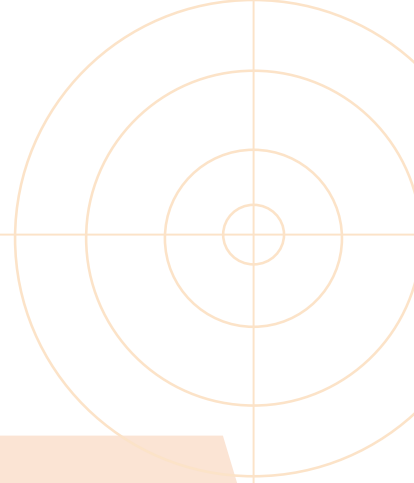
## Use case prioritization for 'Sedan'



**Step 3:** Phased roadmap development: 3-phased approach delineated to address the 36 use cases focusing on building the core models first and optimizing for cost & speed-to-insights



# Solution Architecture



**Input:**  
Photos associated with claim #xx

## Photo quality assessment

## Damage detection

## Post processing

## Repair cost estimation

### Action

Photo quality assessment based on

- Photo metadata (image resolution, information pertaining to damage area etc.)
- Photo characteristics like blurriness, glare, white noise, contrast etc. (Minimum thresholds detected through sensitivity testing)

Damage detection in each photo (multiple damages can be identified)

- Pretrained neural network models like Mask RCNN, SSD, YOLO utilized (Choice of model to be based on desired speed, accuracy and model footprint)
- These models are retrained to detect damage type and severity over the insurer's data

Post processing to rollup information from the photos to the claims level

- Metadata from the photo capture process utilized to identify same damage captured from varying angles
- If metadata is not present, additional experimentation required to link damage across photos

Repair cost estimation of the claim through either

- Model output that is mapped to the claims adjuster guidelines
- Model output integrated with an additional ML model that estimates repair costs (development effort not estimated in the roadmap)

### Output at each stage

Photos associated with claim xx that pass quality threshold



- Moderate dent (location of damage highlighted as bounding box on photo)



- No damage found in second photo

Claim # xx

- Moderate dent (Photo A)
- No damage (Photo B)
- Does not pass quality threshold (Photo C)

**Final output:**  
Claim # xx  
**\$ 500 repair estimate for dent**  
(estimate routed to adjuster for review)

**Monitor, Learn, Optimize**

# Value Delivered

## A comprehensive roadmap for implementing AI-led transformation of the claims settlement process

- Identified list of 36 prioritized, most impactful use cases
- Formed the underlying premise of the drivers of repair costs that are assessable from the photos
- Developed a clear view of timeline, effort estimate, data sample, and tech stack



## About Us

Tiger Analytics is a global leader in AI and analytics, helping Fortune 1000 companies solve their toughest challenges. We offer full-stack AI and analytics services & solutions to help businesses achieve real outcomes and value at scale. We are on a mission to push the boundaries of what AI and analytics can do to help enterprises navigate uncertainty and move forward decisively. Our purpose is to ***provide certainty to shape a better tomorrow.***

Being a recipient of multiple industry awards and recognitions, we have 4000+ technologists and consultants, working from multiple cities in 5 continents.

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