# Project Design Phase-I
# Solution Architecture

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| Date | 12 October 2022 |
| Team ID | PNT2022TMID17365 |
| Project Name | AI Intelligent Vehicle Damage Assessment and Cost Estimator for Insurance Companies |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

- Object localization is done to identify the location of damaged parts in an image and draw a bounding box around each detected object.

- Region Proposal Networks (RPN) are used on feature map to predict regions proposals to be used by RoI Pooling for predicting class and bounding box of object.

- Along with bounding box generation and classification, MaskRCNN also predicts segmentation masks in pixel to pixel manner using Fully Convolutional Network (FCN) on each Region Of Interest (RoI).

- One research [7] uses a joint approach of semantic and instance segmentation to handle mirror reflections.

- To evaluate the model in a practical setup, we installed cameras in a specially designed light street. This light street is in use for regular damage inspections, making it ideal for practical evaluation of the model.

- As proof of concept, we installed four cameras to capture the vehicle from multiple sides. Although, not all areas of the vehicle are captured, it enables an initial performance evaluation.

- The front and rear cameras are placed further away, as no closer mounting option is available.

**Example - Solution Architecture Diagram:**