Accident detection using deep learning

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Project goals

Improving traffic flow by using advanced technologies.

Leading to reduce the waiting time for Najm to arrive and report when accidents happen.

Convolutional neural networks (CNNs) and artificial neural networks (ANNs) are two that work well to process both pictures and video sequences.

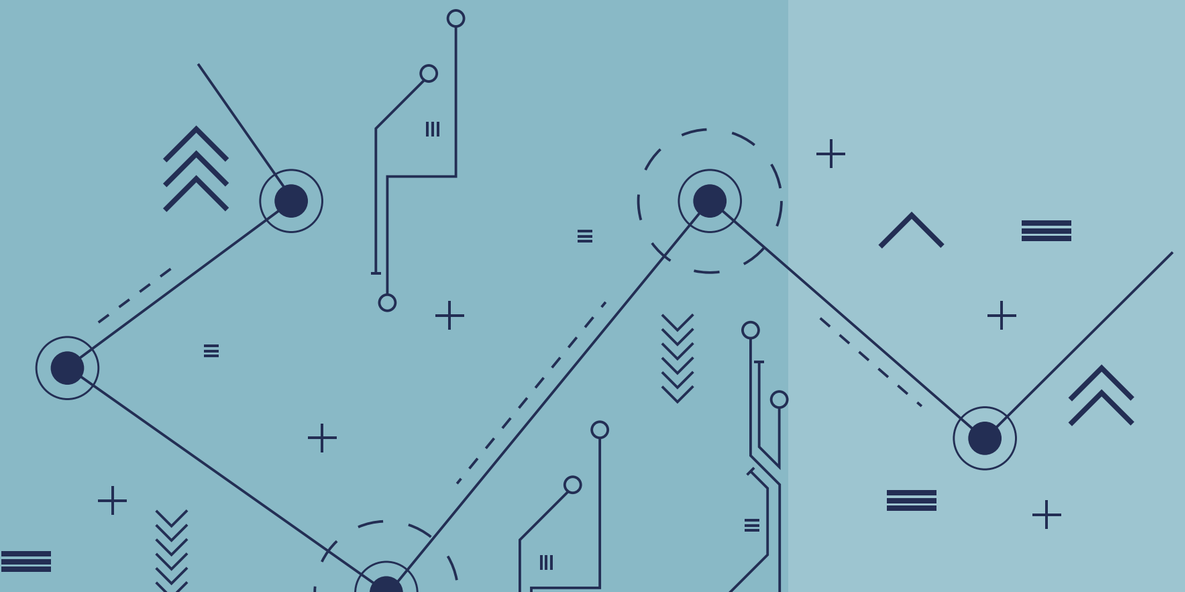
After load the Data

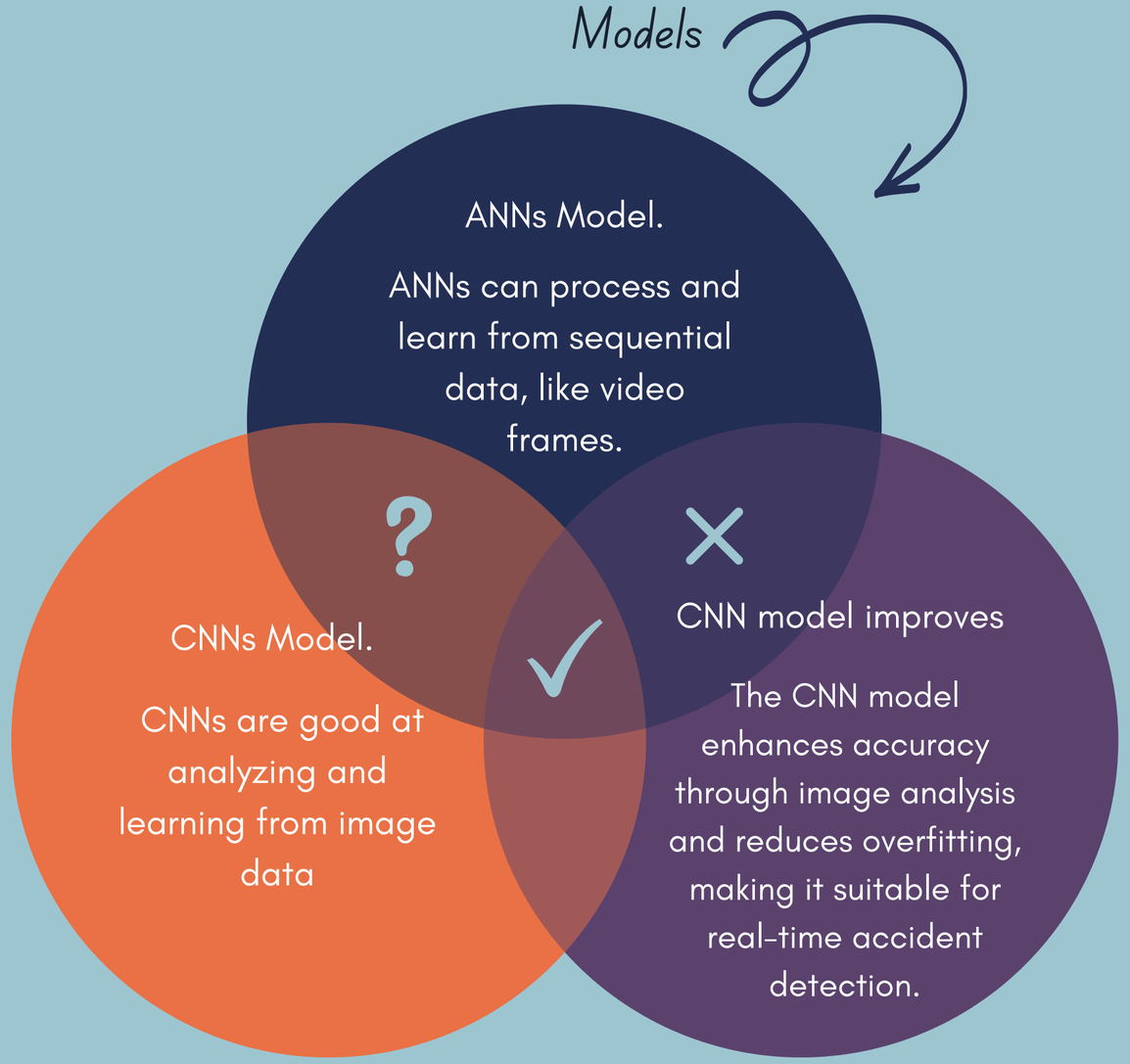
The sample image displays a grid of 9 pictures, each representing a different street scene. Some pictures show car accidents with visible damage, while others show normal traffic without any accidents. Above each picture, there is a label indicating whether the picture represents an (accident) or (not accident).

Choose model architecture

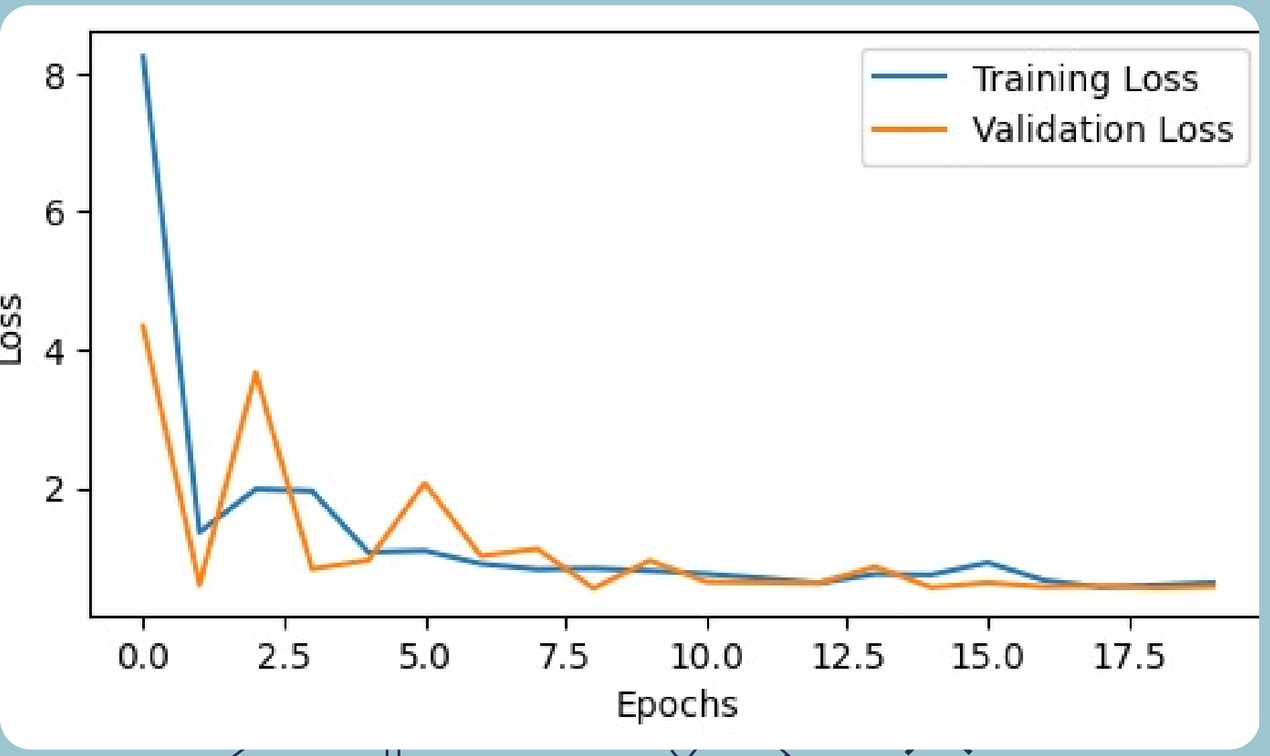
The dataset includes consecutive frames of accident events, which will allow the model to learn the patterns that distinguish accidents from normal situations. This is an important aspect of the dataset.

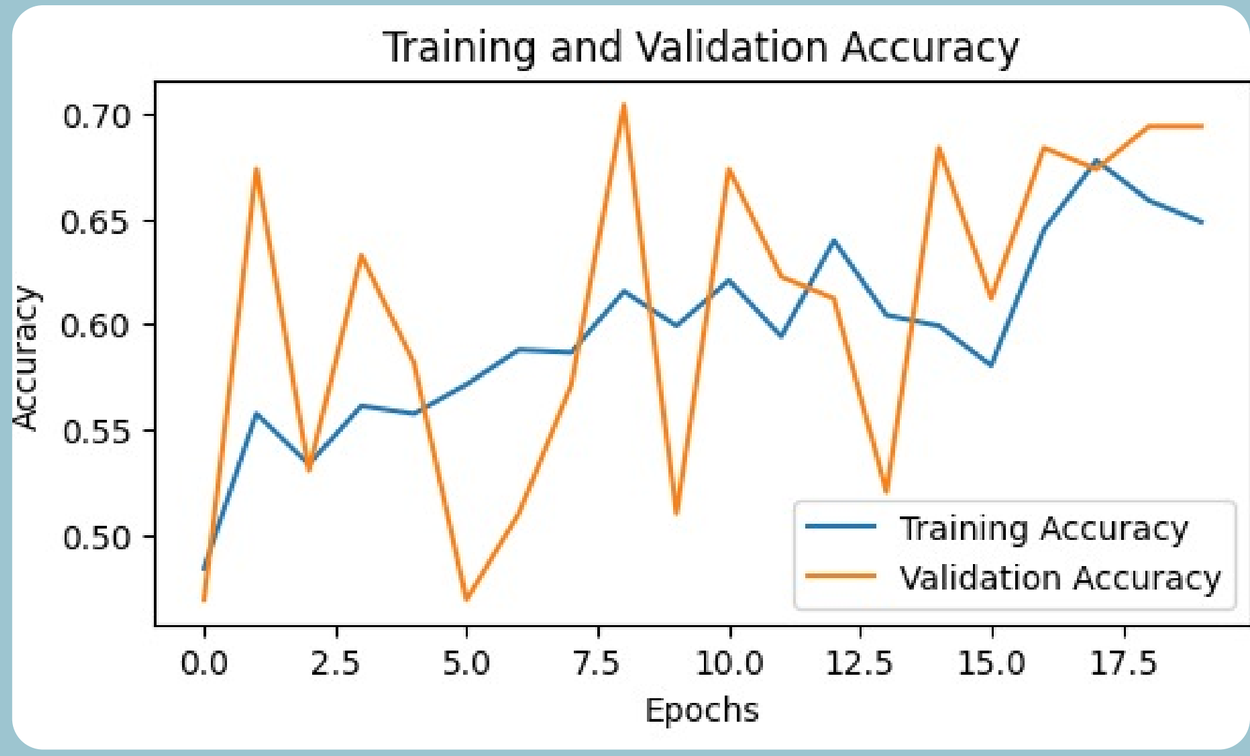
To build the model, we will use a combination of Convolutional Neural Networks (CNNs) and Artificial Neural Networks (ANNs). CNNs are good at analyzing and learning from image data, while ANNs can process and learn from sequential data, like video frames.



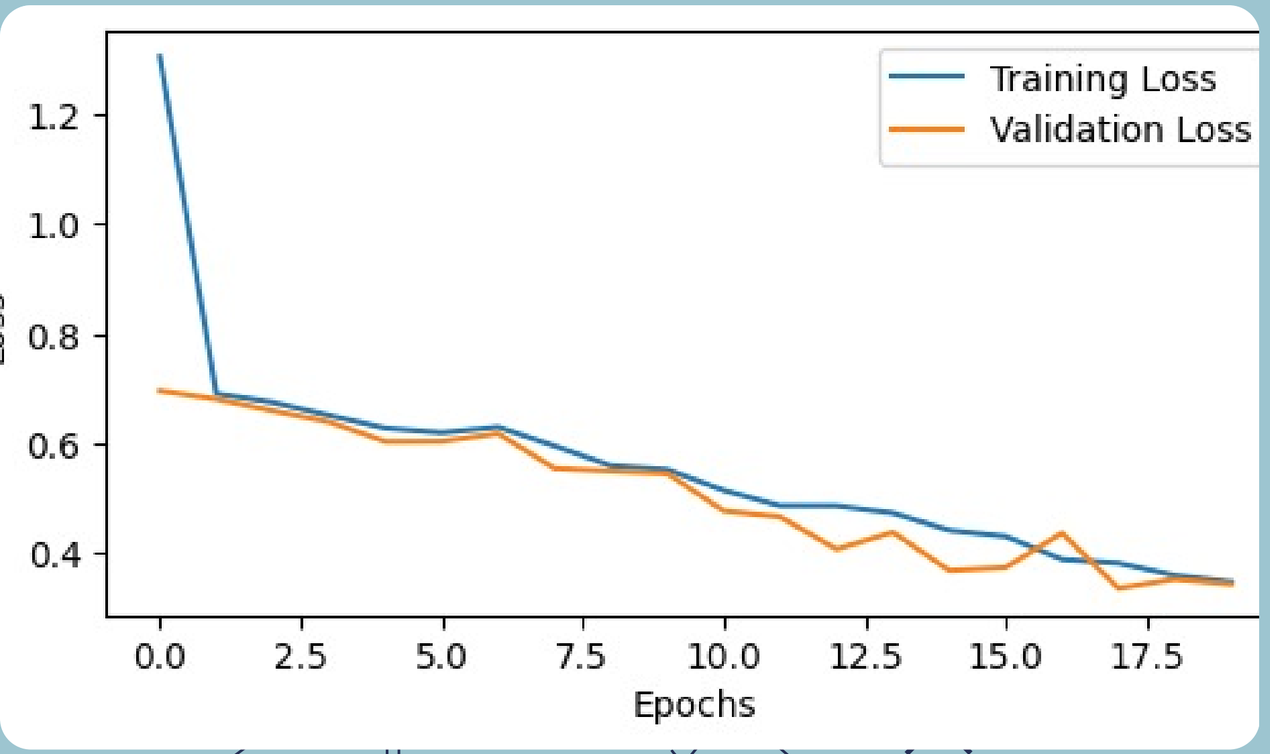


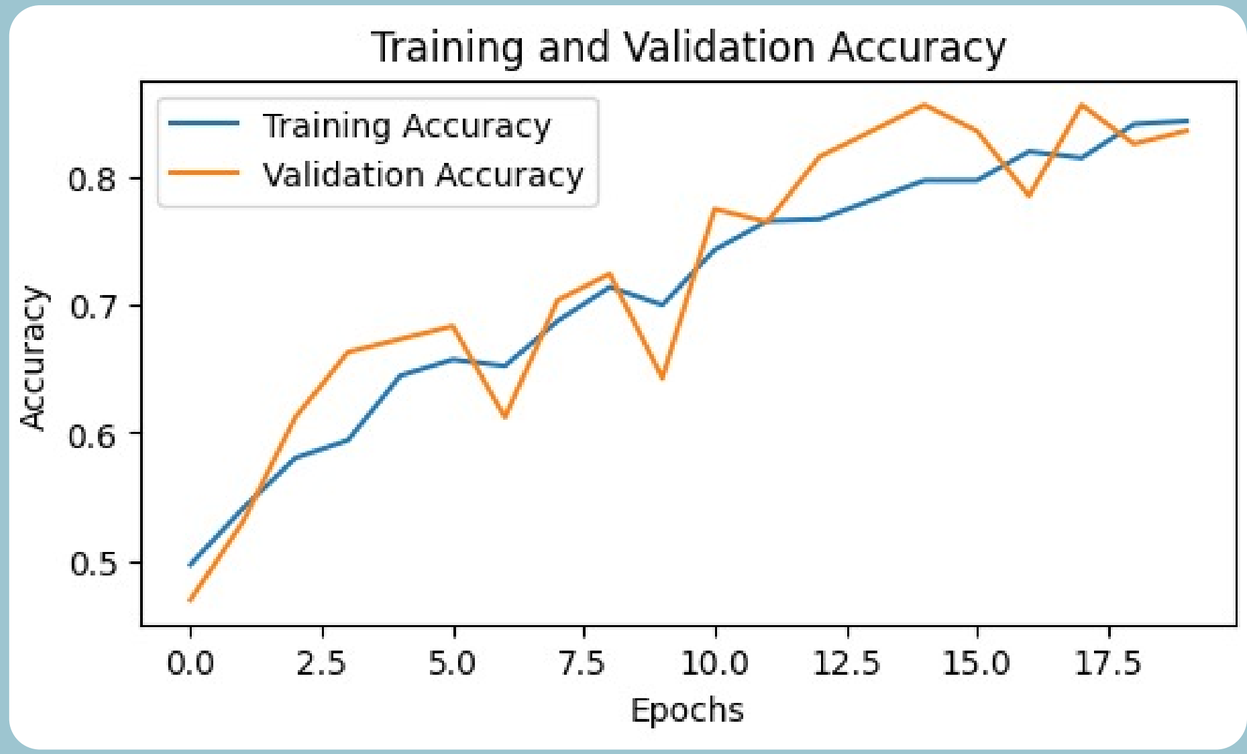
ANN model Evaluate



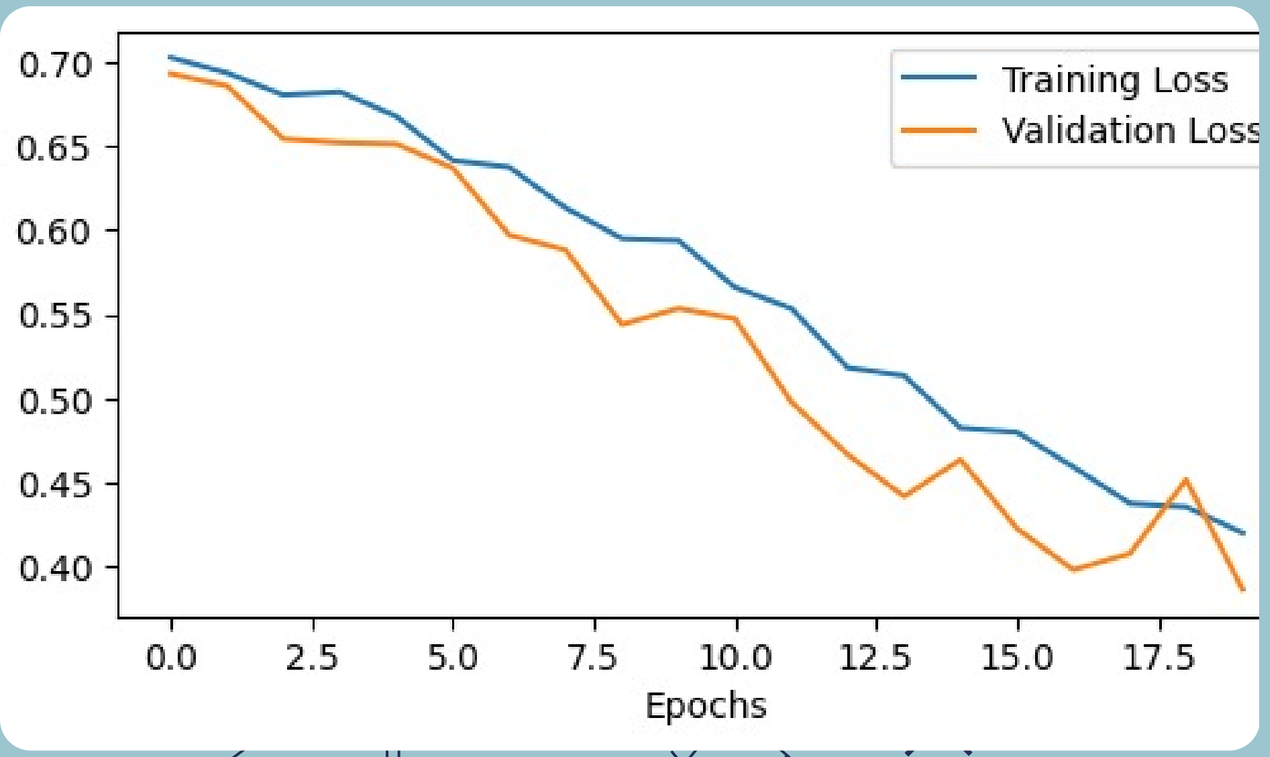


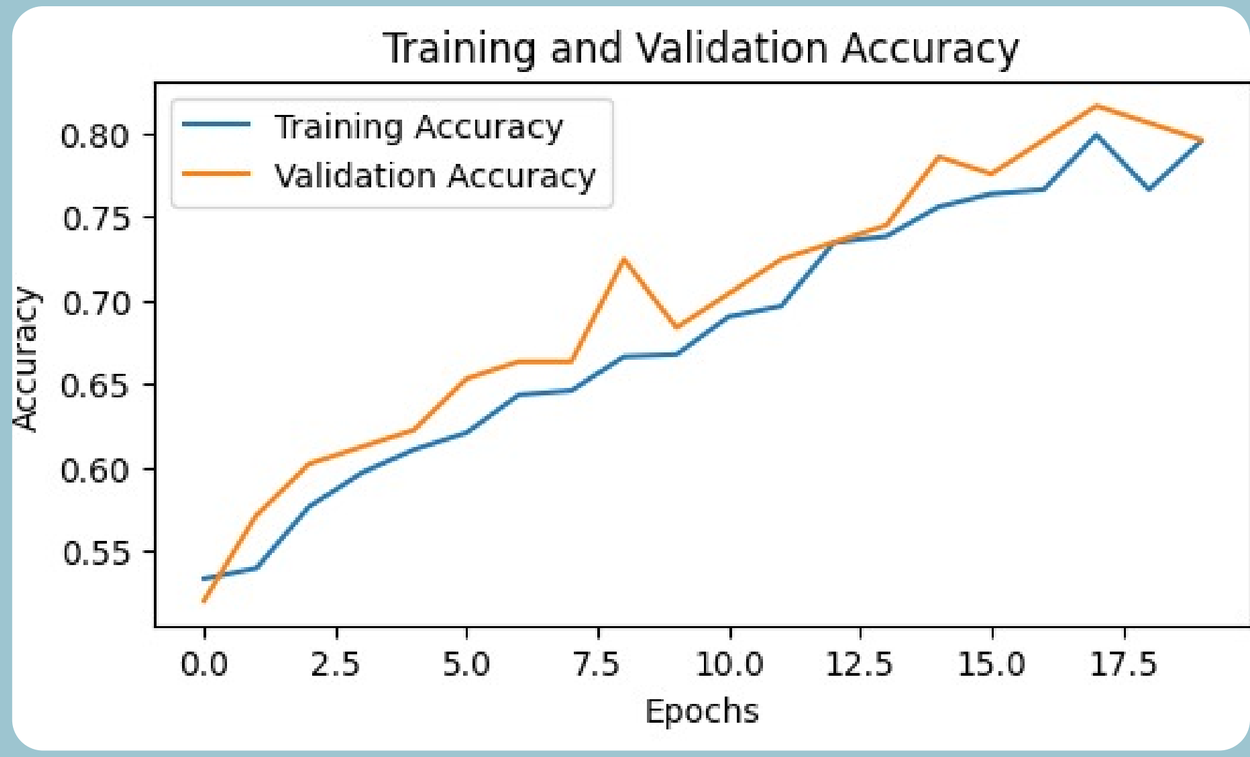
CNN model Evaluate

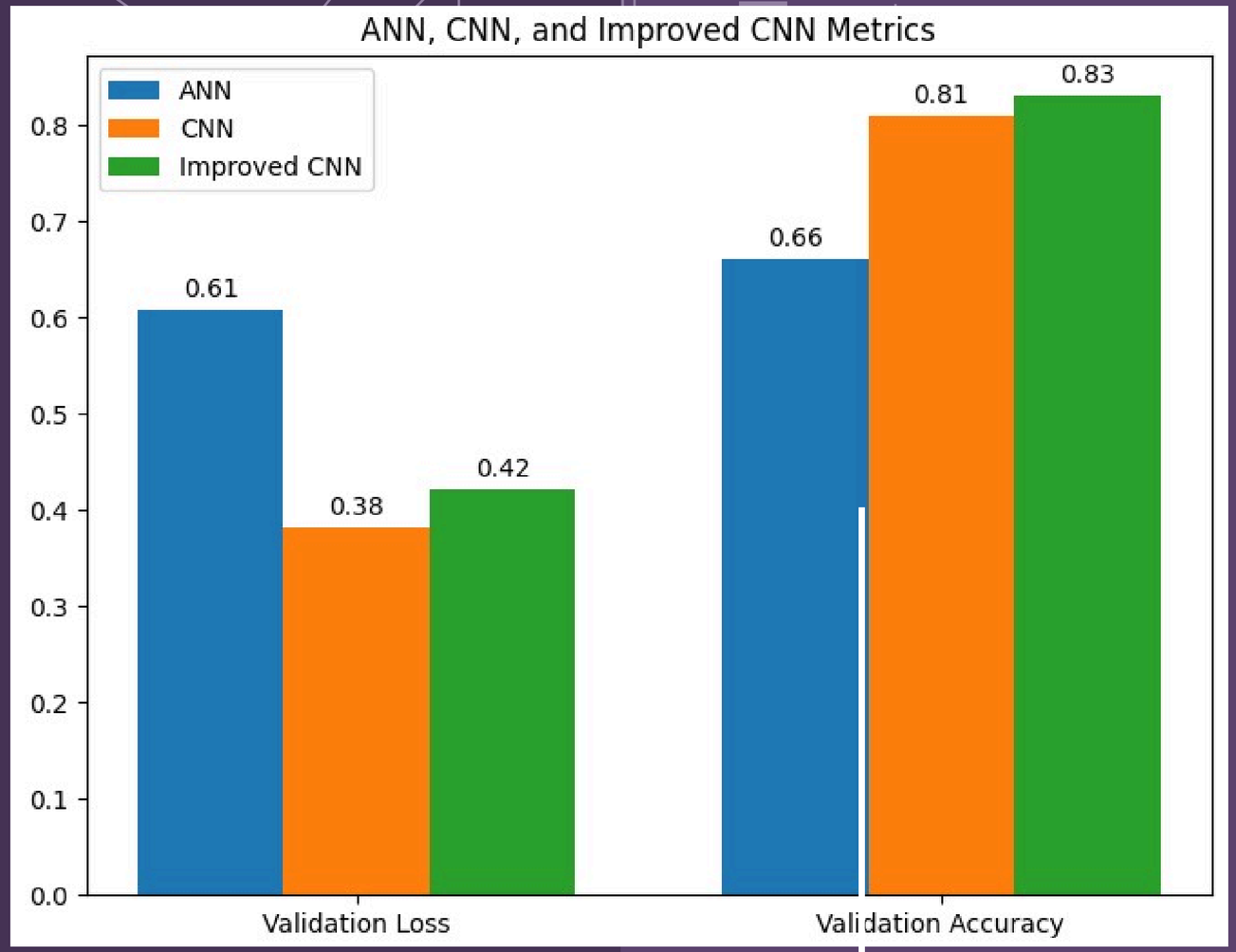




CNN model improvement







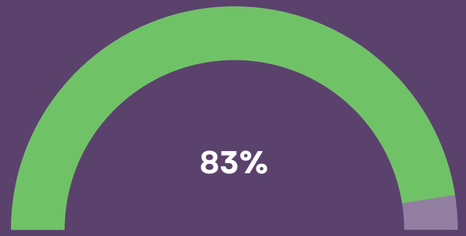
Testing Matrix

Evaluate the Model for all models

The greatest accuracy is indicated by the first gauge at 0.9571, which is associated with a CNN (Convolutional Neural Network) model improvement evaluation.

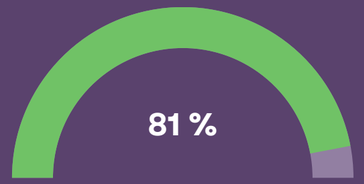
Explanation:

- **0.9571 (CNN model improvement): This is the highest accuracy, indicating the model performs very well.**
- **0.9479 (CNN model): This is also a good accuracy but slightly lower than the improved model.**
- **0.6965 (ANN model): This accuracy is significantly lower, suggesting the model is less effective compared to the CNN models.**



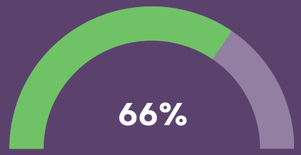
CNN model improvement evaluate

The Accuracy



CNN model evaluate

The Accuracy



ANN model evaluate

The Accuracy

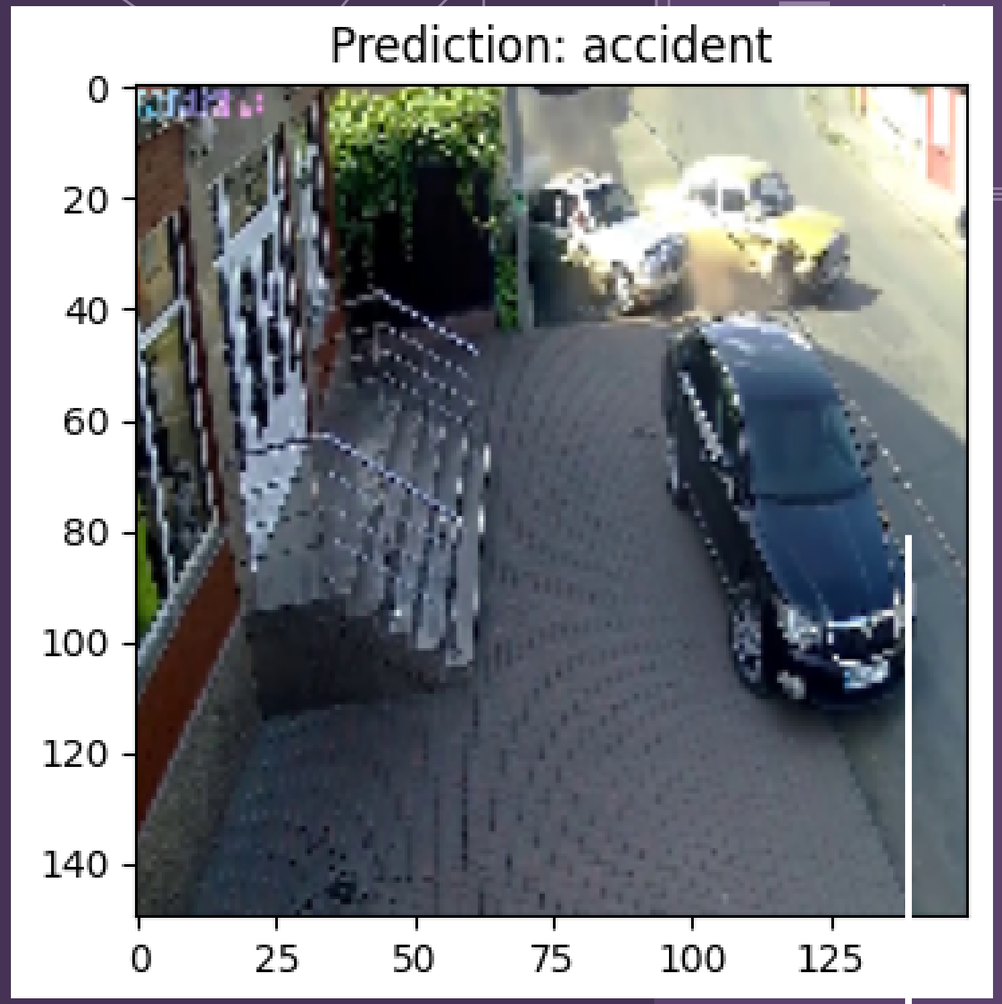


Image Prediction and Visualization

Thankyou!