

## Model Development Phase

Date	21 June 2025
Team ID	SWTID1749821186
Project Title	Enhancing Product Reliability: Leveraging Transfer Learning for Fault Detection
Maximum Marks	5 Marks

### Model Selection Report:

Model	Description
CNNs (e.g., VGG, ResNet, Inception)	Deep neural networks primarily used for image recognition. They leverage convolutional layers to automatically learn spatial hierarchies of features from input images.
RNNs (e.g., LSTMs, GRUs)	Neural networks designed to process sequential data. They have internal memory to maintain information about previous inputs, making them suitable for time series, natural language processing, and video analysis.
Transformers (e.g., ViT, Swin Transformer)	Architectures that rely on self-attention mechanisms to weigh the importance of different parts of the input data. Originally for NLP, they are increasingly dominant in computer vision for tasks like image classification and object detection.  But these require significantly more memory and computation than CNNs.
Generative Adversarial Networks (GANs)	Composed of a generator and a discriminator network that compete against each other to generate realistic data (e.g., images, audio).
Autoencoders	Neural networks used for unsupervised learning of efficient data encodings

(and  
Variational  
Autoencoders  
- VAEs)

(representations). They consist of an encoder that compresses input into a latent-space representation and a decoder that reconstructs the input from this representation.