**Project Design Phase-I**

**Solution Architecture**

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| Date | 04/05/2023 |
| Team ID | NM2023TMID19013 |
| Project Name | Automated weather using transfer learning |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

Inception, ResNet, and Mobile Net are the convolutional neural networks commonly used for an image classification task. Although they carry out similar problems and are based on different architectures, some differences can be expected in the results of specific tasks such as weather classification.

**Inception**

Inception architecture is based on two concepts - 1××1 Convolution and Inception Module. Deep neural networks are expensive in terms of computation. Thanks to 1××1 Convolution it is possible to decrease number of computations by reducing number of input channels. It causes that depth and width of neural network can be increased. Inception Module performs computations of some convolution layers simultaneously and then combines results

**Mobile Net**

Mobile Net targets mobile and embedded systems. This architecture is based on an inverted residual structure, which connections are between the bottleneck layers. It uses lightweight depth wise convolutions for features filtering.

This architecture allows to build lightweight models which do not need much computing power.

MobileNetV2 is a convolutional neural network that is 53 layers deep.

The networks has an image input size of 224××224.

**Res Net**

ResNet (Residual Networks) uses concept of identity shortcut connection that allows to jump over some layers. It partially solves vanishing gradients and mitigate accuracy saturation problem. The identity shortcuts simplifies the network and speeds learning process up.ResNet50 is a convolutional neural network that is 50 layers deep.

The network has an image input size of 224××224.

**Example - Solution Architecture Diagram:**

