**Skin Lesion Classification using Convolutional Neural Network**

**Software and Libraries:**

The following software and libraries are used for this experiment.

* Python
* TensorFlow and Keras
* PyTorch
* NumPy
* Pandas
* Matplotlib
* Scikit-learn
* OpenCV
* Jupyter Notebook
* Kaggle
* Albumentation

**Configuration:**

Model was trained mostly on Kaggle due to lack of computational resource.

* CPU : intel core i5 8th gen
* GPU: 2GB NVIDIA GeForce MX110
* RAM: 8 GB
* Cloud GPU : 16 GB NVIDIA Tesla P100 (Kaggle)

**Dataset Collection:**

All images are augmented and preprocessed before training.

* HAM10000**:** https://www.kaggle.com/datasets/kmader/skin-cancer-mnist-ham10000
* ISIC-2016**:** https://challenge.isic-archive.com/data/#2016
* ISIC-2019: https://challenge.isic-archive.com/data/#2019

**Neural Network Architecture:**

* Pre-trained Model: MobileNetV2,VGG19 and InceptionV3 s used for classification purpose.
* Ensemble Model: Ensemble of MobileNetV2,VGG19 and InceptionV3.

**Workflow:**

* Datasets are collected from online.
* Datasets are prepared using jupyter notebook in local PC.
* Dataset is divided into train and test.
* Pre-trained models are trained using transfer learning.
* Ensemble algorithm is defined.
* Ensemble model is trained using training set.
* Model is validated using validation set.
* Accuracy on test set is obtained.