Deep Residual Learning for Image Recognition

This article Deep Residual Learning for Image Recognition by Kaiming He Xiangyu Zhang Shaoqing Ren Jian Sun by proposes some basic ideas first one which is the residual learning problem that solves the degrading problem when using deep neural networks.Further they demonstrate it with the help of 152 layers deep architecture,thus making ResNets'having lesser complexity and much easier to optimize. This paper also provides the empirical evidence and also the impact of ResNets in deep learning and computer vision.

While "deep Residual learning for image recognition" produced many groundbreaking results such as The Residual learning for deep neural networks.With these new things that has been found there was a lot of complexities and limitations that must be taken into consideration.

Complexities And difficulties:-
Implementation of these types of networks require a deep understanding of how the optimization and other things work.proper training and design should be taken special care.
These models risk vanishing gradients and degradation which leads to performance of the model.
The next one is actually that working of these models may require larger resources such higher capcity GPU 'S and larger amount of memory.so this is a problem for many researchers and people with limited resources.

Limitation:-
The complexity and depth of the model makes them comparatively harder to understand in relation to other models. The inner working and interpreting each of the features becomes challenging , which leads to model behavior prediction.
When the training data is noisy or limited it may be more prone to overfitting of the document. Despite residual connections are made to minimize the risk regularization needs to be done.
Also the quality of the datasets may affect the working of the model such as inadequate or biased datasets which may lead to poor generalization and performance degradation.

Mistakes:-
Every time increasing the depth of the model does not increase the accuracy of the model, sometimes it may lead to problems in optimization and also overfitting .
While deploying it there may be problems such as computational accuracy and memory which can be impractical . Even though we decide to by ignoring these problems it may lead to models that are not suitable for real world usage.
Problems like weight issues or not regulating properly may lead to overfitting of the data and the generalization performance changing to low even in efficient models like residual.

Deep residual Learning has provided us with a new respective but it also comes with its own difficulties/limitations which should be taken care of while using the model so as to obtain a better performance and optimization.