Problem Statement :- Image denoising/reconstruction using autoencoders

Solution :- Segmentation plays a vital role in extracting information from medical images.

Segmentation is the process of partitioning the image into distinct regions. Example:- Magnetic resonance imaging is used to extract images of soft tissues of human body. It is used to analyse the human organs without the need for surgery. Generally MRI images contain a significant amount of noise caused by operator performance, equipment and the environment, which leads to serious inaccuracies MRI seems to be efficient in providing information regarding the location of tumours and even the volume. The noise present in the MRI image can be removed by using various de-noising techniques whichever is best suited depending upon the image acquired and then can be processed by any of the segmentation methods. The noise in MRI images may be due to field strength, RF pulses, RF coil, voxel volume, or receiver bandwidth.

Image noise is random variation of brightness or colour information in images, and is usually an aspect of electronic noise. It can be produced by the sensor and circuitry of a scanner or digital camera.

Nowadays Medical imaging technique Magnetic Resonance Imaging (MRI) plays an important role in medical setting to form high standard images contained in the human brain. MRI is commonly used once treating brain , prostate cancers , ankle and foot. The MRI images are usually liable to suffer from noises such as Gaussian noise , salt and pepper noise and speckle noise. So getting of brain image with accuracy is very extreme task. An accurate brain image is very necessary for further diagnosis process.

So we are making a model which can remove these noises and produce a clear image , which can be further used by the target audience (the surgeons , doctors etc) for a clear image or MRI .

Working with the model :-

When working with the model make sure your image has following constrains:-

- Image should be 128 x 128
- Image should in in black and white or Grayscale
- Format of the image should be in .png extension

Since the model as well as the processed output is saved on the local machine rather than a server, we have prototyped the website on posted a screenshot of the website.

Other than this the Uploads on the GitHub will explain how the model works, in denoising the image.