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## Unsupervised Anomaly detection on X-Ray images

### Abstract

Machine Learning and Deep learning is a growing area of research within the medical field; they are helping doctors to predict the disease from a patient's medical reports promptly. With the rate of increase in the detection of new virus and cancer types every year, it is challenging to get labeled up-to-date data for medical research. This area of research is susceptible to human lives; hence the data should be audited or annotated by only skilled professionals.

Unsupervised learning or semi-supervised learning algorithms applied for medical research due to limitations in labeled data. GANs are generally used to regenerate images with new features from the given images. GAN has two significant blocks - generator and discriminator to generate near real images. We have used this capability of GANs to detect anomalies in patient X-rays images, and it will be a helpful tool in health care.

This project aims to use unsupervised learning for anomaly detection using GANs. Using the X-ray images of patients from Stanford Research, apply GANs technique, and fine-tune weights for accurate prediction. We will choose more than one State-of-art GAN method and compare the results, and report on the best performing GAN in anomaly detection problems.