# ABSTRACT

*The main problems encountered are the movement of medical equipment between rooms without strict procedures, loss of high-value devices, and difficulty tracking the location of critical assets, and difficulty tracking obstructed medical equipment. Object detection in hospital environments is often hampered by partial occlusion, dynamic movement of equipment, and high variations in lighting. This leads to low object detection accuracy, affecting the efficiency of hospital asset management. This research proposes the integration of Generative Adversarial Networks (GANs) method with YOLOv8 to improve the object detection accuracy of hospital assets. GANs are used to reconstruct images of obstructed medical equipment, while YOLOv8 is in charge of detecting the object. This research utilizes a GAN-based inpainting approach to reconstruct obstructed images, followed by object detection using YOLOv8. Evaluation is performed with parameters such as F1-Score, Confidence Score, MSE, PSNR, and SSIM to measure the reconstruction quality and detection accuracy. The experimental results showed significant advantages over previous methods: the 1000 epoch model achieved PSNR of 39.68 dB, SSIM of 0.9910, and MSE of 7.0030, with obstructed object detection accuracy reaching F1-score of 0.933, surpassing Faster R-CNN (F1-score 75.86%) and SSD MobileNet (F1-score 82.34%). The aim of this research is to develop a more accurate and efficient hospital asset object detection system. It is concluded that the integration of GAN and YOLOv8 successfully overcomes the challenges of obstructed object detection, and provides an innovative solution in hospital asset management, which in turn can improve operational efficiency and the quality of health services.*

*Keywords— Generative Adversarial Networks, YOLOv8, Occluded Object, Computer Vision, Deep Learning*