

## Abstract

Tri-way pixel value differencing (TPVD) is the development of pixel value differencing (PVD) steganographic method. PVD method has proven capable of providing a large embedding capacity and good *stego*-image quality. To increase the embedding capacity of PVD methods which only use one direction only, three different *edge* directions are considered and used effectively in TPVD design. However, not all pixel pairs can be used because it has the possibility to be “out of bound”. Similarly, the optimal selection of reference points and adaptive rules can cause pixel values to be “out of bound”. The solution is to define the usable and unusable pair and also the mechanism of labelling usable and unusable block. While TPVD method was originally used in grayscale, this final project has developed implementation TPVD method to 24-bit color images.

The experimental results show that defining usable and unusable pair, so usable and unusable block becomes an important key to the success of the process of insertion and extraction. While the use of 24-bit color image can produce a large capacity and the *stego* image is imperceptible.

**Keywords:** steganography, image, pixel value differencing, tri-way pixel value differencing, unusable block, hiding capacity.