

## ABSTRACT

Insertion of specific information into another data is important to the security of digital data, especially 3D objects. One of efforts to the digital data security, namely the watermarking method. Watermarking is a method for inserting information (watermark) to a digital products (audio, image, video, and text). Watermarking process aims to provide copyright protection, fingerprinting, authentication, and data validation. In this final project, the watermark is used in the form of text data type and a host of 3D digital objects. Type of watermarking used is a blind watermarking. The process of blind watermarking has the advantage, which is not required before a host of 3D digital objects watermarked on the extraction side.

Triangular mesh watermarking based on a collection of vertices that are contained in the 3D space. Then the triangular face formed by the three-point vertex of 3D objects. In this final project, used principal object axis method is one of watermarking methods based on key, radians and neighborhood operators on 3D objects. Watermark is designed using three stages, namely preprocessing, transformation watermark, and watermark. Furthermore, 3D objects that have been through the process of watermarking is detected and extracted back into the original information.

Results obtained from experiments carried out is the use of the method of Principal Object Axis to the value of SNR  $> 70$  dB, the MSE and VER nearly zero in the embedding process. The extraction process without attack, the BER is zero. In the test system, the watermarked 3D objects have resistance to several attacks, such as rotation, translation, and rescaling. But the cropping attack, terompet.obj 3D objects capable of extracting the information reaches 50% cropping because aimlessly watermark extraction results with BER is 0.

**Key words:** watermarking, principal object axis, 3D object, triangular mesh