ABSTRACT:

This paper presents an algorithm, which is a hybrid-computing algorithm in representing solid model. The proposed algorithm contains two steps namely reconstruction and representation. In the reconstruction step, neural network with back propagation has been applied to derive the depth values of solid model that was represented by the given two-Dimensional (2D) line drawing. And then in the representation step, once the depth value was derived, the mathematical modeling was used to generate the mathematical models to represent the reconstructed solid model. The algorithm has been tested on a cube. Totally, there are eighty-three cubes has been used on the development of neural network model and six mathematical equations yielded to represent each one cube. The proposed algorithm successfully takes the advantages of neural network and mathematical modeling in representing solid model. Comparison analysis conducted between the algorithm and skewed symmetry model shows that the algorithm has more advantages in term of the ease of the uses and in simplifying the use of mathematical modeling in representing solid model.