ABSTRACT

Photogrammetric with the use of vertical aerial photo as a tool for mapping the topographic in a certain area, practically have been used since 1849. Compared to monoscopic method, stereoscopic method use human vision analogy where picture taken with two camera with a certain distance in the same time so it can produce depth perception.

This final project will explain the 3 Dimension reconstruction techniques about stereo aerial image using a method from *parallax stereoscopic* and *mathematical morphology*. The image which will be processed is a digital stereo image from box that imitates a miniature of high buildings. This digital image will be passed through morphologic filter to select the shape to be recognized and to be analyzed further using *parallax stereoscopic* calculation.

Based on the result from the experiment, the *parallax stereoscopic* calculation in digital image needs a minimum of object height ratio compare to *plane height* 3:19, so the data fluctuation can be avoided and the expectation of the average accuracy is 95,67% (camera correction factor $KK = 0.0026725$ cm/pixel). In this final project, the difference of *structure element* in morphologic filter that is being used, produce different object shape and it has insignificant difference of average dimension accuracy. If the measurement of structure element is bigger, then the edge of the image produced is smoother and the object shape that is measured is clearer.

Keywords : *3D reconstruction, mathematical morphology, parallax stereoscopic, plane height, structure element*