ABSTRACT

Synthetic Aperture Radar (SAR) is a type of radar used for geoscience, climate change research, environmental and object mapping in the form of two or three dimensional images. Objects mapped on radar images have several uses, including measuring the movement of the earth's surface to assist human activities, understanding volcanic activity and earthquakes. Other uses are to study movements and change the size of glaciers and ice cubes to understand long-term climate variability.

In analyze the results of object mapping, the process of reconstruction or image formation is important. In this final project, an image reconstruction system is made and tested from simulation results of SAR radar which was made using the help of MATLAB software. The image reconstruction process is carried out using backprojection method that takes matrix data from the previous radar projection process as input and also all data related to the projection process that might be useful for completing the image revenue process. There are several test scenarios performed to see the compatibility of the SAR end image results with the backprojection method against the target position at the initial initialization stage.

In this final project, conclusions can be obtained that the system designed for the image reconstruction process are going well. This is indicated by the system being able to describe points that have been predetermined. Tests have also been carried out on target positions, signal to noise ratio and target patterns.

Keywords : *Synthetic Aperture Radar (SAR), Backprojection,* MATLAB.