ABSTRACT

Mapping and landscape monitoring are an observation and research activities of a landscape in particular are. Construction changes or even vegetation composition changes on the surface area often occur whether it is caused by natural factor or even human factor. From that a reliable and affordable mapping and monitoring system is needed. To do the monitoring and mapping operation a help from UAV is needed to capture and collect information about vegetation/construction that compose the area of observation.

UAV generally employs some devices or module like mini pc, camera, GPS, compass, transmitter and any other devices to enhance its performance and effectiveness. The information captured and collected by the UAV can be processed within UAV itself or to be processed on the external devices. And in some circumferences UAV employs both local and external processing station. Internal processing mostly carried by the core module like mini pc (microcomputer), and external data processing will be held at the ground station the quality of the map that is generated by the image processing gratly depends on the input data So the data collection must be planned properly.

Based on the evaluation done in this research, SURF Detection, k-NN, Ransac and blending able to process aerial photos into larger image and a little bit lessen the distortion and perspective projection. The system able to process images with different rotation/ orientation, scale (zoom deep) differences and also able to process subsequent data input into one single image in the end. Aside from that it is still needed to properly adjust the way surface image taken by adjusting camera tilt and provide camera stabilization.

Keywords: aerial photo, aerial mapping, DSM, image stitching.