ABSTRACT

Sensing Technology will become an important part of the future, one of its purposes is for object detection, velocity estimation, and ranging for speed trap camera on the side of the road to detect the velocity of vehicle so they wont surpass the chosen speed limit. Radar technology is one of sensing technology. Frequency Modulated Continuous Wave Radar is a popular technique that many people use. Many implementation of this technique is often use in various field, from automotive to health.

In this research, a Software Defined Radio based FMCW radar has been design with GNURadio for detection, range estimation, and velocity of an object. The specification of system radar that has been designed is on 5.8 GHz carrier frequency, with a sawtooth modulation. The implementation use one unit of USRP with log periodic antenna. The result for range testing show a good quality from 6 meter above. The prediction accuracy for 6 meter is 82.86% and the accuracy prediction for 9 meter is around 93.56%. For range estimation at 3 meter, the prediction accuracy is at its worst, at about -402.72%. The velocity experiment does not show a good quality.

Keywords: *FMCW*, *Radar*, *GNURadio*, *USRP*, *Detection*, *Estimation*