

## **ABSTRACT**

Radio Detecting and Ranging or commonly referred as radar is a tool for using radio waves. The radar sends out electromagnetic waves and the signal is sent as short pulses which are then reflected by objects in its path which then bounce back to the radar.

Conventional security methods, especially in the home security, such as CCTV cameras and motion sensors are found to have many shortcomings, especially when the lighting conditions are blurry and the motion sensor is not able to identify the detected object. There are several methods for detecting humans with radar systems such as using Stepped-Frequency Continuous-Wave (SFCW), Frequency-Modulated Continuous-Wave (FMCW) and also with Ultra-Broadband Impulse Radio (IR-UWB).

This Final Project, testing is carried out in the form of respiratory monitoring on human subjects aged 20 to 22 years and cats aged 1 to 3 years at a distance of 1 meter using the IR-UWB method and paying attention to the results of RPM and Breathing Pattern on each target and the results obtained value the average human RPM (male) is 14.76 RPM, human (female) is 18.79 RPM and the cat's average value is 32.4 RPM. Comparison of Breathing Pattern for human and cat targets, shows the amplitude value for cat targets is smaller than for human targets. From this experiment, it can be proven that the IR-UWB Radar can identify differences in respiration patterns in cats and humans so that a security system for detecting animals, especially cats can be realized.

**Key Word** : Radar, IR-UWB, Respiratory, Human Respiratory, Cat Respiratory.