

ABSTRACT

Respiratory rate measurement is a fundamental form of assessment towards human healthiness besides heart rate measurement and blood pressure measurement. The goal of this research is to make respiratory rate measurement can be done by using android base smartphones.

Measurement of respiratory rate is done by placing smartphone on the left, center, and right diaphragm. Accelerometer and gyroscope sensors then record changes in acceleration caused by the diaphragm movement when breathing occurs. Variational Mode Decomposition (VMD) is the signal processing used in this research, which has a method of decomposing signal into several modes (IMFs) which is then selected the mode with the best signal. Peak detection then implemented to obtain the value of respiration rate per minute (RPM)

The result of this research is a respiratory rate data using variational mode decomposition (VMD) method that achieve an accuracy of 89,46% in measuring respiration rate and a 96,74% in precision.

Keyword: *Respiration rate, variational mode decomposition, accelerometer sensor, gyroscope Sensor, smartphone*