

## ABSTRACT

Snoring is a condition that is commonly found in adults or elderly during the sleeping period. Although it looks insignificant, it is a symptom of Obstructive Sleep Apnea (OSA) syndrome. In Indonesia, especially Jakarta, the prevalence of high risk of OSA is 49.5%. OSA is one of the diseases that is considered serious, and if not treated properly, can have fatal effects. Therefore, someone who has symptoms of acute snoring generally will go to the hospital to have it examined. The standard of examination for OSA in the medical world is the polysomnography (PSG) method. This method uses various medical instruments to record signals present in the body such as electrocardiograph (ECG), electroencephalography (EEG), and electromyography (EMG) signals to calculate the severity of OSA. However, in addition to the high cost and the extensive time needed, using the PSG method can make patients uncomfortable due to the many tools used.

Based on these problems, a number of studies were carried out to detect OSA without the need for the PSG method. One way is to isolate and analyze only one signal used in the PSG, such as an ECG signal. This ECG signal will then be extracted to obtain specific features. The features will then help in the next stage, which is machine learning. By utilizing machine learning methods and having sufficient data, OSA detection can be carried out only by analyzing ECG signals.

The result of this final project is a model that can classify apnea using the HRV methods and SVM algorithms. The parameters used are MHR, SDNN, RMS, NN50, pNN50, SDDSD, median, interquartile, mean RR-interval, NN20, and pNN20. From the test results obtained, the highest accuracy is 89.5% using the Fine Gaussian kernel.

**Keywords:** SVM, OSA, machine learning, electrocardiogram (ECG)