# ABSTRACT

In today's digital era, digital devices are used for various purposes, including medical needs. One of them is the adoption of digital blood pressure instruments, which are easy to read and comprehend, tiny, portable, and affordable. However, the issue is how exact the instrument is compared to analog or conventional tools, whose precision is undeniable.

To achieve the goal, we first obtained blood pressure data using a digital blood pressure meter and then stored the data in MySQL as a database with a total of 256 pieces of data. The data will be randomly extracted using a Gaussian transform into 4 data groups with data sizes of 128, 64, 32, and 16 data points, respectively. Then, each data size will be recovered with OMP using wavelets and FFT to get the recovered signal. Furthermore, the recovered signals will be evaluated by evaluation metrics to analyze the accuracy of the data results as recovered signals. The methods used in this evaluation are MSE, MAE, PRD, and SNR.

The purpose of this design is to establish the accuracy of the measuring equipment, in this case a blood measurement device, utilizing OMP and evaluation metrics using data sample sizes of K 128, K 64, K 32, and K 16, to identify which data size has the highest accuracy. After determining the instrument's accuracy, we may increase its performance by making component modifications to achieve better results. Furthermore, we may utilize this instrument application for various applications that require a digital or internet connection.



***Key Words:*** *Digital Blood Pressure, Evaluation Metrics, Gaussian Transform, Orthogonal Matching Pursuit (OMP), Wavelet Transform.*