ABSTRACT

Heart disease stands as a primary cause of death worldwide resulting from multiple influences including unhealthy lifestyles, genetic predispositions, and specific health issues. Current heart examinations generally use analog stethoscopes, which only produce sounds perceived through the doctor's hearing. These limitations prompted the development of a digital stethoscope connected to a computer using Python programming. The objective of this study is to create and build a digital stethoscope capable of capturing heart sounds, transforming them into digital data, and presenting graphs and audio in real time. Technology enables doctors to monitor patients' heart conditions remotely without direct contact, making the process more efficient and practical. The generated data allows medical personnel to accurately analyze heart sounds to support diagnoses. Test results show that the device can produce clear and accurate heart rate graphs. This digital stethoscope system shows a 100% accuracy rate of heart rate signal detection, with graphic visualization accuracy ranging from good to very good, so it can be concluded that this tool is reliable and effective for real-time heart rate monitoring. In addition to improving diagnostic accuracy, this digital stethoscope also offers greater convenience for doctors and patients during examinations. This research contributes to the development of modern medical tools that can digitally support patient medical records and advance technological transformation in healthcare.

***Keywords** : digital stethoscope, heart rate, Python, graphical display, audio*