The objective of the project was to develop a biomedical device that can monitor a dog’s heart rate with a new type of sensing technique. Nowadays more and more people are keeping dogs as their loyal companions. According to statista.com, the number of pet dogs has increased from 68 million by 2000 to 89.7 million by 2017. As such the need for simple reliable and cheap heart rate sensor for dogs will also be demanded increasingly. The approach towards this project is to measure the breath rate of a dog which is related to its heart rate by detecting the movement of that dog’s chest. The impedance of the fabric will increase as the dog’s chest stretches the fabric and vice versa, together with another resistor we can create a voltage divider that converts resistance variations into a voltage signal. The signal of that dog’s chest movement will be captured by a microcontroller and then sent over to a computer through wireless connection for further process and analysis. The sensor-microcontroller device will be attached to a dog harness. Finally, in our computer, we would filter out all the noises and measure the number of pulses which represents the breath rate and ultimately heart rate from the signal. After that those data can be used in analyzing diagnosing and improving our dog’s health conditions. Our device can really simplify the dog heart rate sensing technology making them more affordable and reliable for a dog or even other pet owners.