Wireless Heart Rate Sensor Using Conductive Fabric for Dogs

The objective of the project is to develop a biomedical device that can noninvasively monitor a dog’s heart rate using a conductive fabric. 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 in 2000 to 89.7 million by 2017. As such the need for simple reliable and cheap heart rate sensor for dogs will also be increasingly demanded. 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 the dog’s chest. The resistance of the fabric will vary as the dog’s chest stretches the fabric. Using a resistance to voltage convert circuitry, we generate a voltage signal that is correlated with the movement of the dog’s chest. This signal is captured using a microcontroller and then sent over to a computer wirelessly for further process and analysis. This custom-made sensor-microcontroller device is 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. The recorded data can be used in analyzing, diagnosing and improving the 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.