

## Measurement of Respiration and Heartbeat by Using Smart Rubber Sensor

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We describe a measurement method of respiration and heartbeat by using Smart Rubber Sensor, the rubber-based flexible tactile sensor sheet developed by us [1]. This method is useful for recognizing person's conditions: sleeping soundly, sleeping lightly, lying down, sitting on a bed, and so on. Our goal is to watch over those who require nursing care.

The proposed method measures respiration and heartbeat as shown in Fig. 1. First, we measure body pressure using Smart Rubber Sensor placed on a bed. Then, the method applies a frequency analysis to the time series data of body pressure. Finally, respiration and heartbeat are obtained by extracting suitable frequency band. In the experiments, respiration and heartbeat have been successfully measured.

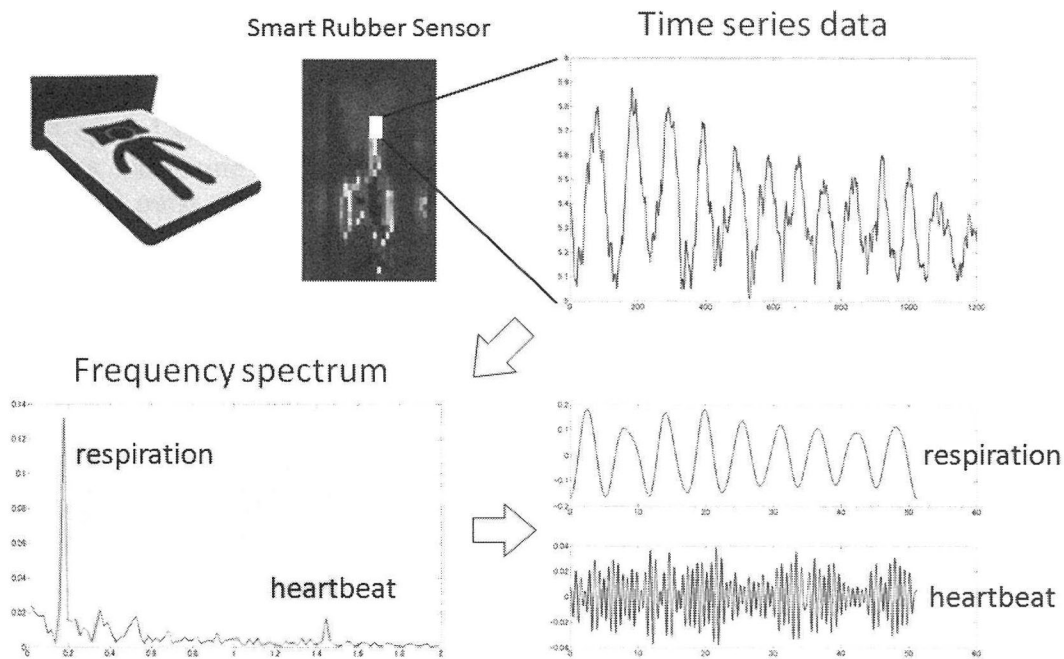


Figure 1: Measurement of respiration and heartbeat by using Smart Rubber Sensor.

### References

- [1] S. Guo, Y. Kato, H. Ito, and T. Mukai, "Development of Rubber-Based Flexible Sensor Sheet for Care-Related Apparatus", Sumitomo Electric Industries Technical Review, No. 75, pp. 125-131, 2012.