

Wang Bo Jason

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Education

• National University of Singapore

Doctor of Philosophy in Electrical and Computer Engineering (GPA: 4.75/5)

Jan 2019 - Dec 2022

- Research topic:

Development of AI-assisted RF sensing for biomedical applications

Supervisor: Professor Guo Yongxin

Master of Electrical Engineering (GPA: 4.75/5)

Jan 2018 - Dec 2018

• Beijing Institute of Technology

Bachelor of Science in Telecommunication Engineering

Aug 2013 - Jun 2017

Work Experience

Founder @ *Sensorimote Pte Ltd*

April 2023 - Now

Research Fellow @ *National University of Singapore*

Mar 2023 – Now

Research Projects

• Intelligent Health Measurement Robot based on Non-contact Sensors

Team leader

- Design of a non-contact health measurement system to sense human vital signs (including **blood pressure**, blood oxygen saturation, heart rate, breath rate, and temperature) with fusion of an IR sensor, **a radar and a camera**.
- Algorithm development for **non-contact, calibration-free blood pressure estimation** using the radar and camera.
- System deployment on a robot platform for hospital application, in a **desktop box** for in-home healthcare and Internet+ remote medication, and an in-bed long-term health monitoring.
- For more information, please access [THIS LINK](#)

Prototypes:

1. Non-contact health measurement robot ([video demo](#))

2. Non-contact health measurement system: box solution for remote medication ([video demo](#))

3. In-bed health monitoring system

3. H. Shi, J. Pan, Z. Zheng, **B. Wang**, C. Shen, and Y. Guo, "Radar-based blood pressure estimation using multiple features," in 2022 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), 2022, pp. 183–185.

• Non-contact Fall Detection and Alerting System

Team leader

- Design of a **real-time indoor fall detection** and alerting system using a radar sensor.
- Algorithm development for fall motion detection using the **millimetre-wave radar** and **machine learning** methods.
- For more information, please access [THIS LINK](#)

Prototype: A real-time indoor fall detection and alerting system ([video demo](#))

• Development of a Knowledge Sharing Tool for Research Groups

Developer

- Design of a software to share knowledge within a research group to improve the efficiency of a team.
- The current version includes a **literature review sharing tool** and **resource sharing tool**.
- In the literature review tool, the users summarize papers and patents using **keywords** and **share the summary** with other members within the research group. A real-time synchronization system based on FTP protocol is designed for this function.
- In the resource sharing tool, team members share codes, data, etc. marked with keywords.
- For more information and video demos, please access [THIS LINK](#)

Journal and Conference Publications

1. **B. Wang**, H. Zhang, and Y. -X. Guo, "Radar-based Soft Fall Detection Using Pattern Contour Vector", *IEEE IoT J.*, vol. 10, no. 3, pp. 2519-2527, 2023.
2. **B. Wang**, Z. Zheng, and Y.-X. Guo, "Millimeter-Wave Frequency Modulated Continuous Wave Radar-Based Soft Fall Detection Using Pattern Contour-Confined," *IEEE Sens. J.*, vol. 22, no. 10, pp. 9824–9831, 2022.
3. **B. Wang**, L. Guo, H. Zhang, and Y. X. Guo, "A Millimetre-Wave Radar-Based Fall Detection Method Using Line Kernel Convolutional Neural Network," *IEEE Sens. J.*, vol. 20, no. 22, pp. 13364–13370, 2020.

4. **B. Wang**, Z. Zheng, S. Wang, Y. Guo, "A Cuff-less Calibration-free Blood Pressure Estimation Method With Fusion From A Radar And A Camera," submitted to *IEEE Sensors J.*, 2022.
5. **B. Wang**, Y.X. Guo, Smart Non-Contact Wireless Sensing of Life Activities for Biomedical Applications (invited), IEEE IWS2021, 24-26 May 2021, Nanjing, China.
6. **B. Wang**, Y.X. Guo, Smart Non-Contact Wireless Sensing of Life Activities for Biomedical Applications (invited), 2021 International Applied Computational Electromagnetics Society (ACES-China) Symposium, 28-31 July 2021, Chengdu, China.
7. **B. Wang** and H. Zhang, "Ultra-wide dynamic range rectifier topology for multi-sine wireless powered endoscopic capsules," in 2018 IEEE MTT-S International Wireless Symposium, 2018, pp. 1–4.
8. **B. Wang** and Y. Guo, "Soft Fall Detection Using Frequency Modulated Continuous Wave Radar And Regional Power Burst Curve," in 2022 Asia Pacific Microwave Conference (APMC), 2022, pp. 240-242.
9. Wen, X. Song, Z. Zheng, **B. Wang**, and Y. Guo, "A Multi-class Dataset Expansion Method for Wi-Fi-Based Fall Detection," in 2022 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), 2022, pp. 195–197.
10. R. Wang, X. Zhou, **B. Wang**, Z. Zheng, and Y. Guo, "A Subcarrier Selection Method for Wi-Fi-based Respiration Monitoring using IEEE 802.11 ac/ax Protocols," in 2022 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), 2022, pp. 189–191.
11. Z. Zheng, **B. Wang**, and Y. Guo, "Non-Contact Calibration-Free Blood Pressure Estimation Method Using Dual Radar," in 2022 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), 2022, pp. 186–188.
12. H. Shi, J. Pan, Z. Zheng, **B. Wang**, C. Shen, and Y. Guo, "Radar-based blood pressure estimation using multiple features," in 2022 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), 2022, pp. 183–185.
13. J. Cao, A. Feng, and **B. Wang**, "An FPGA-based Fall Detection System Using Millimeter-wave Radar and Convolutional Neural Network," in 2022 IEEE 5th International Conference on Electronic Information and Communication Technology (ICEICT), 2022, pp. 308-311.

Patents

1. **B. Wang**, Z. Zheng, Y.X. Guo, "A Radar-Based Fall Detection Method", China invention of CN116933002A, published
2. **B. Wang**, Y.X. Guo, "A Falling-Down Detection Method based on Support Vector Machine", China invention of CN112630777A, published.
3. **B. Wang**, Y.X. Guo, "Robot (Vital sign detection)", China appearance design of CN307849488S, granted.
4. **B. Wang**, Y.X. Guo, "Robot (Vital sign detection)", Singapore appearance design of SG30202300119SS, granted.
5. Y.X. Guo, Z. Zheng, **B. Wang**, "Vital sign detection device, system, and data processing method", PCT of WO 2022/231525A1, national phase.
6. Y.X. Guo, Z. Zheng, **B. Wang**, "Vital sign detection device, system, and data processing method", China utility of CN218484554U, granted.
7. Y.X. Guo, Z. Zheng, **B. Wang**, "A Non-contact Wireless Vital Sign Detection System", China invention of CN116407096A, published.
8. H.T. Shi, J.S. Pan, **B. Wang**, Y.X. Guo, "An Intelligent Temperature Measurement System", PCT of WO/2023/277812A2, international phase.
9. H.T. Shi, J.S. Pan, **B. Wang**, Y.X. Guo, "An Intelligent Temperature Measurement System", China invention of CN115615557A, published.

Awards and Certificates

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| 1. Excellent student award, in 2022 <i>Singapore Workshop on Antennas</i> , Singapore | 27-28 Oct, 2022 |
| 2. Bronze prize @ The 8 th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition (Team leader) | Oct, 2022 |
| 3. Cisco Certified Network Associate - Routing and Switching | May 2016 |