Wang Bo Jason

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Education

Doctor of Philosophy in Electrical and Computer Engineering   Jan 2019 - Aug 2023
  - *National University of Singapore*
  - Research topic: Development of AI-assisted RF sensing for biomedical applications
Master of Electrical Engineering (GPA: 4.75/5)   Jan 2018 - Dec 2018
  - *National University of Singapore*
Bachelor of Science in Telecommunication Engineering   Aug 2013 - Jun 2017
  - *Beijing Institute of Technology*

Work Experience

Research Fellow @ *National University of Singapore*   Mar 2023 – Aug 2024

Entrepreneurship

Sensori Healthcare Pte. Ltd. (www.sensorihealthcare.com)   Incorporated in Oct 2024

- *Milestones*
  - Product development & launch: **SENSORI XTab^{TM}** – Portable vital signs monitor (video demo)
  - **Purchase order of RMB 2.3M** secured
  - NUS GRIP Run 10: **Winner of SGD 100K investment** from NUS (reported by Singapore newspaper *Lianhezaobao* link)
  - NUSRI enterprise funding of **RMB 500K**
  - Hong Kong HKSTP Ideation Program funding of **HKD 100K**
  - **Collaborative agreement** with National Healthcare Group (NHG), Singapore on 10th Nov 2025
  - **Pilot trial** in hospitals under NHG from Dec 2025
  - Lab visit by **Singapore Minister of Education, Chan Chun Sing** on behalf of NUS Start-ups on 21st Jan 2025

- *Awards*
  - **Third Prize** at the 13th "Entrepreneurship Jiangsu" Technology Innovation Competition (Nanjing Division) on 30th Oct 2025
  - **Third Prize** at the 9th China (Shenzhen) Innovation & Entrepreneurship International Competition (IEIC) 2025 (Singapore Division) on 22nd Oct 2025 **(Award: RMB 30,000)**
  - **Excellence Award** at the 19th "Chunhuibei" Entrepreneurship Competition on 18th Dec 2024
  - **Excellence Award** at the 2024 China Taihu International Innovation and Entrepreneurship Competition on 16th Dec 2024
  - **Excellence Award** at the 2nd "Talent Creation Free Trade" International Innovation and Entrepreneurship Pitching on 8th Aug 2024

Research Projects

Vital Signs Measurement System 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, pulse rate, respiration rate, and temperature) with fusion of an IR sensor, **a radar and a camera**.
 - A breakthrough in algorithm development for **non-contact, calibration-free blood pressure estimation** using the radar and camera with an **AI-based regression model**.
 - Prototypes
   1. XRobo - Intelligent health monitoring robot (video demo)
   2. XCube - Self-service desktop monitoring device (video demo)
   3. XCare - Bed-side health monitoring system (video demo)

Non-contact Fall Detection and Alerting System   *Team leader*
 - Design of a **real-time indoor fall detection** and alerting system using a radar sensor. When fall accidents happen within the sensing range, the alert will be triggered and sent to family members.
 - Development of a series of pattern-contour and machine-learning-based algorithms to solve the problem of miss alarm of soft fall motions using the millimetre-wave radar.

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

Development of a Knowledge Sharing Tool for Research Groups   *Inventor*
- Development Goal: Share knowledge within the research group to improve team efficiency.
- Literature Sharing Tool: Users can summarize read literature in the form of keywords and share literature summaries within the research group. Group members maintain the same summary document. I developed an FTP-based real-time sharing system to implement this function.
- Resource Sharing Tool: Share resources such as code and data; tag and retrieve resources using keywords.
- Since current AI tools already possess sufficiently powerful literature summarization capabilities, the development of this tool has been discontinued.
- For more information and video demos, please access this link

Research Publications

1. **B. Wang,** H. Zhang, and Y. X. Guo, "Radar-based Soft Fall Detection Using Pattern Contour Vector", *IEEE Internet of Things Journal,* 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 Sensors J*ournal, 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 Sensors Journal*, vol. 20, no. 22, pp. 13364–13370, 2020.
4. X. L. Kong, W. R. Zhou, **B. Wang,** Y. X. Guo, "Towards Continuous and Contactless Cardiac Monitoring: A State-Space Approach with FMCW Radar," *IEEE Transactions on Instrumentation and Measurement,* vol. 75, Art. no. 4001212, 2026. **(Corresponding author)**
5. H. T. Shi, X. Y. Zhang, Z. Zheng, **B. Wang**, X. Z. Tian, and Y. X. Guo, "Microwave Wide-Area Self-Injection-Locked Radar for Wrist Pulse Detection," *IEEE Transactions on Microwave Theory and Techniques,* vol. 73, no. 8, pp. 4261-4272, 2025. **(Corresponding author)**
6. Z. Zheng, S. Q. Dong, **B. Wang,** and Y.X. Guo, "Contactless High Dynamic-Range Blood Pressure Estimation by Pulse Morphological Features Based on Accurate Doppler Radar Detection," *IEEE Transactions on Microwave Theory and Techniques*, vol. 73, no. 8, pp. 4273-4285, 2025. **(Corresponding author)**
7. Z. Zheng, **B. Wang**, Z. Z. Zhou, and Y. X. Guo, "Radar-Based Short Time Frequency Accumulation for Masked Fall Detection," *IEEE Sensors Journal*, vol. 24, no.13, pp. 21358-21368, 2024. **(Corresponding author)**
8. H. T. Shi, Z. Zheng, **B. Wang,** and Y. X. Guo, "Enhancing SIL Radar Efficiency for Wrist Pulse Detection: A Comparator-Counter Approach," *IEEE Transactions on Antenna and Propagations,* early access.
9. Z. Zheng, S. Y. Zhao, **B. Wang,** Z. Y. Zhou, X. D. Chen, and Y.X. Guo, "Enhanced Radar Fall Detection via Compressed Sensing and Deep Learning-Assisted Point Cloud Generation," *IEEE Transactions on Antenna and Propagations,* early access.
10. X. L. Kong, **B. Wang**, and Y. X. Guo, "Frame-level Pain Intensity Assessment via Multilevel Hash-based Features and Transformer," in *2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM),* 2024, Lisbon, Portugal.
11. **B. Wang**, Y. X. Guo, "Smart Non-Contact Wireless Sensing of Life Activities for Biomedical Applications (invited)," in *2021 IEEE MTT-S International Wireless Symposium*, 24-26 May 2021, Nanjing, China.
12. **B. Wang**, Y.X. Guo, "Smart Non-Contact Wireless Sensing of Life Activities for Biomedical Applications (invited)," in *2021 International Applied Computational Electromagnetics Society (ACES-China) Symposium,* 28-31 July 2021, Chengdu, China.
13. **B. Wang** and Y. X. 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.
14. **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.
15. Z. Zheng, H. T. Shi, Z. Y. Zhou, **B. Wang,** C. X. Zhu, and Y. X. Guo, "Non-Contact Blood Pressure Estimtion Based on Doppler Radar with Adaptive Filtering Technique," in *2024 IEEE Asia-Pacific Microwave Conference (APMC)*, 2024, pp. 208-210. **(Best student paper award)**
16. S. Q. Dong, **B. Wang**, C. Z. Gu, and Y. X. Guo, "Accurate Noncontact Sleep Apnea-Hypopnea Detection using a K-band Biomedical Radar," in *2024 15th Global Symposium on Millimeter-Waves & Terahertz (GSMM)*, 20-22 May 2024, Hong Kong, China.

17. H. T. Shi, Z. Zheng, **B. Wang,** Y. H. Fan, and Y. X. Guo, "Signal Quality Indices Evaluation for Optimized Radar-Based Blood Pressure Monitoring," in *2023 Asia-Pacific Microwave Conference (APMC)*, 2023, pp. 209-211.
18. X. Wen, X. R. Song, Z. Zheng, **B. Wang**, and Y. X. 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.
19. R. L. Wang, X. L. Zhou, **B. Wang**, Z. Zheng, and Y. X. 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.
20. Z. Zheng, **B. Wang**, and Y. X. 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.
21. H. T. Shi, J. S. Pan, Z. Zheng, **B. Wang**, C. Shen, and Y. X. Guo, "Radar-based blood pressure estimation using multiple features," in *2022 IEEE MTT-S International Microwave Biomedical Conference (IMBioC)*, 2022, pp. 183–185.
22. J. Cao, A. K. 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. Y. X. Guo, **B. Wang,** Z. Zheng, "Vital sign detection device, system, and data processing method", US patent of US12433496B2, active. (SENSORI XTab^{TM}, PCT)
2. Y. X. Guo, **B. Wang,** Z. Zheng, "Vital sign detection device, system, and data processing method", European patent of EP4331477A4, published. (SENSORI XTab^{TM}, PCT)
3. Y. X. Guo, **B. Wang,** Z. Zheng, "Vital sign detection device, system, and data processing method", China invention of CN117255646A, published. (SENSORI XTab^{TM}, PCT)
4. J. F. Cai, **B. Wang,** Y.Z. Wei, X. X. Zhang, S. L. Wang, X. G. Tu, and T. H. Zhang, "Physiological index monitoring method, device, equipment and medium used in micropressure oxygen chamber", China invention of CN119791619B, active. (My company owns)
5. X. Feng, Y. Y. Shi, L. Du, **B. Wang,** S. Q. Dong, H. T. Shi, "A method and device for regulating an external diaphragmatic pacemaker based on respiratory radar", China invention of CN121265983A, published. (My company owns)
6. **B. Wang**, Z. Zheng, Y. X. Guo, "A Radar-Based Fall Detection Method", China invention of CN116933002A, published.
7. **B. Wang**, Y. X. Guo, "A Falling-Down Detection Method based on Support Vector Machine", China invention of CN112630777A, published.
8. **B. Wang**, Y. X. Guo, "Robot (Vital sign detection)", Singapore appearance design of SG30202300119SS & China appearance design of CN307849488S, active.
9. Y. X. Guo, **B. Wang**, Z. Zheng, "Vital sign detection device, system, and data processing method", China utility of CN218484554U, active.
10. Y. X. Guo, Z. Zheng, **B. Wang,** "Vital sign detection device, system, and data processing method", China invention of CN116407096A, published.
11. H. T. Shi, J. S. Pan, **B. Wang**, Y. X. Guo, "An Intelligent Temperature Measurement System", China invention of CN115615557A, published.
12. Z. Zheng, **B. Wang**, Y. X. Guo, "Attitude detection methods, devices and terminal equipment", China invention of CN120972125A, published.
13. L. X. Zhou, L. R. Wang, **B. Wang,** Y. X. Guo, "Method, device, terminal equipment and storage medium for detecting respiratory frequency", China invention of CN119523460A, published.
14. L. R. Wang, L. X. Zhou, **B. Wang,** Y. X. Guo, "Method, system, terminal device and storage medium for monitoring living activity through walls", China invention of CN119538061A, published.
15. Y. X. Guo, Y. K. Guo, **B. Wang**, "Artificial intelligence-based auxiliary interpretation method, device, terminal and storage medium", China invention of CN111833991B, active.
16. K. L. Hu, Y. X. Guo, Y. K. Guo, W. Wang, **B. Wang**, "Endoscope image recognition method", China invention of CN112488979B, active.

Research Awards and Certificates

1. **Excellent student award**, in *2022 Singapore Workshop on Antennas*, Singapore   27-28 Oct, 2022

2. **Best student paper**, in 2024 Asia-Pacific Microwave Conference, Indonesia   18-21 Nov, 2024
3. **Bronze prize** @ The 8th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition (Team leader)   Oct, 2022
4. Cisco Certified Network Associate - Routing and Switching   May 2016

Photos

Singapore Minister of Education CHAN Chun Sing   21 Jan, 2025

Product

SENSORI XTab™

Pilot trial in a hospital under NHG

Awards and Reports

Excellence Award @ 19th "Chunhuibei" Entrepreneurship Competition on 18 Dec, 2024

Sensori總裁王博博士指出，據醫護人員反映，幫病患測量生命體徵數據過程繁瑣，因此萌生了開發非接觸式生命體徵監測設備的想法，通過雷達、攝像頭及紅外傳感器的融合技術實現。他坦言目前測量的血壓數值與醫療器械測出的相比，有約5%的誤差，團隊將採集更多數據，迭代數據和算法，提高準確度。

王博說，雖然已有競爭對手研發出了非接觸式生命體徵監測設備，但一般只能同時監測一兩個指標，而Sensori不僅能同時監測五項指標，還能持續監測，因此處於領先地位。團隊已申請八項專利，其中兩項是《專利合作條約》（Patent Co-operation Treaty，簡稱PCT）專利。他透露，目前正與兩家醫院就試點運行洽談。

Sensori總裁王博博士演示團隊研發的非接觸式設備如何同時監測五種生命體徵指標。（蔡家增攝）

Singapore newspaper *Lianhezaobao* on 1 Dec, 2023

Excellence Award @ 2nd "Talent Creation Free Trade" International Innovation and Entrepreneurship Pitching on 8 Aug, 2024