

## RESEARCH

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### FAN YANG

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## EDUCATION

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**PolyU** **01/2022-07/2024**

Departement of Electrical and Electronic Engineering

PhD. in *Intelligent algorithms in battery health monitoring based on ultrasonic testing*

**PolyU** **09/2018-06/2020**

Departement of Electrical Engineering

Msc. in *Electrical Engineering*

**QHU** **09/2013-06/2017**

Mechanical electrical engineering

B.Eng. in *Mechanical electrical engineering*

## PROFESSIONAL EXPERIENCE

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*Research Assistant, The Hong Kong Polytechnic University.* **09/2020-12/2021**

- Research the newest machine learning algorithms and ultrasound technology on battery healthy monitoring
- Apply extended Kalman filtering to SoC estimation of lithium-ion battery
- Publish papers for the team

### Current Work

- Ultrasound signal processing by intelligent algorithms
- Machine learning application
  - Remaining Useful Life Prediction of Lithium-Ion Batteries

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### Project (As PI)

(POC23-02 Partner-23-246) The monitoring of indoor health with AI-based environmental perception system was admitted to HKSTP Pre-incubation Programme (IDEATION), 2023.05.11-2024.05.31, **Yang, F.**, Mao Qian, Funding, **100k \$**

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### Project (Role As Keymember)

**Ir Dr LAI Wai-lok, Wallace**, 2021-2022, “Development of gas pipe diagnostic technology by nondestructive thermographic and ultrasonic methods (PRP/014/19FX)”, from Innovation Technology Fund and Hong Kong and China Gas Company Ltd.” (PRP/014/19FX, ZM34)(Core member), Hong Kong Polytechnic University

*Responsible for Algorithm developing and GUI design for ultrasound inspection part in project*

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## Journal Papers

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[1] **Yang, F.**, Shi, D., Lo, L. Y., Mao, Q., Zhang, J., & Lam, K. H\*. (2023). Auto-Diagnosis of Time-of-Flight for Ultrasonic Signal Based on Defect Peaks Tracking Model. *Remote Sensing*, 15(3), 599.(**IF=5.0**)

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- [2] **Yang, F.** \*, Shi, D., & Lam, K. H\*. (2022). Modified extended Kalman filtering algorithm for precise voltage and state-of-charge estimations of rechargeable batteries. *Journal of Energy Storage*, 56, 105831. (IF=9.4)
- [3] **Yang, F.**, Shi, D., Mao, Q., & Lam, K. H\*. (2023). Scientometric research and critical analysis of battery state-of-charge estimation. *Journal of Energy Storage*, 58, 106283. (IF=9.4)
- [4] Zhang, J., Long, X., Zhang, G., Ma, Z., Li, W., Wang, **Yang, F.**, ... & Lam, KH\* (2023). Broadband transparent ultrasound transducer with polymethyl methacrylate as matching layer for in vivo photoacoustic microscopy. *Photoacoustics* , 100548. (IF=7.9)
- [5] Wang, D., Yang, Y\*, Zhou, T., & **Yang, F.** (2021). An investigation of fire evacuation performance in irregular underground commercial building affected by multiple parameters. *Journal of Building Engineering*, 37, 102146. (IF=6.4)
- [6] **Yang, F.**, Mao, Q.\* "Auto-Evaluation Model for the Prediction of Building Energy Consumption That Combines Modified Kalman Filtering and Long Short-Term Memory", *Sustainability*, Nov. 2023. (IF = 3.9)  
<https://doi.org/10.3390/su152215749>
- [7] Guocui BAO, Dongliang SHI, Jiaming ZHANG, **Yang, F.**, Lam, K. H\* "Samarium-Doped Lead Magnesium Niobate-Lead Titanate Ceramics Fabricated by Sintering the Mixture of Two Different Crystalline Phases", *Materials*, 2023. (IF = 3.4)
- [8] Jiaming ZHANG, Guocui BAO, Wen GAO, Riqiang LIN, **Yang, F.**, Lam, K. H\* "Miniature Ultrasound Transducer Incorporating Sm-PMN-PT 1-3 Composite", *Journal of Composites Science*, 2024. (IF = 3.3)
- [9] Wang, D, Yang, Y, Zhou, T, **Yang F.** " An investigation of fire evacuation performance in irregular underground commercial building affected by multiple parameters". *Journal of Building Engineering*, 2021 (IF = 6.4);37, 102146.  
<https://doi.org/10.1016/j.jobee.2021.102146> (IF = 6.4)
- [10] **Yang, F.**, Qian MAO, Jiaming ZHANG, Guocui BAO, Lam, K. H & Ka Wai Eric Cheng.(2024). Real-time state-of-charge estimation for rechargeable batteries based on in-situ ultrasound-based battery health monitoring and extended Kalman filtering model (Submitted to *Applied Energy*)
- [11] **Yang, F.**, Qian MAO, Jiaming ZHANG, Guocui BAO, Kwok-ho LAM and Ka wai Eric Cheng. Novel Joint Algorithm for State-of-Charge Estimation of Rechargeable Batteries Based on the Back Propagation Neural Network Combining Ultrasonic Inspection Method (Major revision, *Journal of Energy Storage*) (IF=9.4)
- [12] Mao Q, Zheng W, Shi M, **Yang F\***. Scientometric Research and Critical Analysis of Gait and Balance in Older Adults. *Sensors*. 2024; 24(10):3199. <https://doi.org/10.3390/s24103199> (IF=3.9)

**Note:** \* indicates the corresponding author

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## Conference Papers and Oral Presentation

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- [1] **Yang, F.**, Qian MAO Lam, K. H\* "A novel time-of-flight auto-diagnosis model for ultrasonic signal using a sliding window technique based on empirical mode decomposition", *Proceedings of the Annual British Conference on Non-Destructive Testing*, Volume 2023, Number 1, 2024.
- [2] **Yang, F.**, Qian MAO, Menghan Shi, Fangling Xie, Ka wai Eric CHENG\* "Enhancing Ultrasound Imaging through Convolutional Neural Networks: A Health Informatics Approach", *AHFE 2024*
- [3] Qian MAO, Lisha YU; Jiaxin ZHANG, **Yang, F.**, Hailiang, WANG\*, "Do Sensor-Based Interventions Differ from Traditional Physical Therapies in Improving Older Adults' Balance?", *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 2023. <https://doi.org/10.1177/21695067231192520>
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## Awards and Honors

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Nominee, <b>Hong Kong Polytechnic University</b> , Schmidt Science Fellows	2025
Dr Winnie S M Tang-PolyU Student Innovation & Entrepreneurship Scholarship, <b>20k \$, PolyU</b>	2023
Outstanding Student teams, <b>Proof-of-Concept (POC) Funding Scheme, 5k \$, PolyU</b>	2023
Outstanding Student Scholarship (6%), Qinghai University	2016
Merit Student (5%), Qinghai University	2016

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Merit Student (5%), Qinghai University	2014
Outstanding Student Scholarship (6%), Qinghai University	2014

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## Reviewer for Journal

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Aging Clinical and Experimental Research	2023
Journal of the American Medical Directors Association(JAMDA)	2023
Journal of energy storage	2024
ISA Transactions	2024
Engineering Applications of Artificial Intelligence	2024

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## Teaching experience and Conference service

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Lecturer for Po Leung Kuk Celine Ho Yam Tong College , VINCI AI, Hong Kong	2022
Certificates of Merit for Teaching Assistants, PolyU	2023
Assesment Chair 2024 10th International Conference on Power Electronics Systems and Applications (PESA), IEEE, Hong Kong	2024