ICPMMT 2022 Keynote Speech

Ubiquitous Internet of Things

Prof. Yeong-Lin Lai

BACKGROUND

Yeong-Lin Lai received the Ph.D. degree from the Institute of Electronics, National Chiao Tung University, Taiwan, in 1997. Dr. Lai is currently a Distinguished Professor with the Department of Mechatronics Engineering, National Changhua University of Education, Taiwan. He is also the Dean of the College of Engineering and the Director of the Baoshan Campus Joint Services Center, National Changhua University of Education. His research interests include Internet of Things, intelligent systems, and artificial intelligence. From 1985 to 1989, he was with the Electronic Systems Research Division, National Chung-Shan Institute of Science and Technology, Taiwan, where he worked in the field of electronic system design and testing. From 1992 to 1993, he was a Senior Engineer at Macronix International Co., Ltd., Hsinchu Science Park, Taiwan, where he was engaged in VLSI design. In 2001 and 2003, he was the visiting scholar of Communication Research Center, Ottawa, Canada. From 2012 to 2017, Dr. Lai was the Director of the Mechatronic Integration and System Control Research Center, National Changhua University of Education. From 2012 to 2018, he was the Chairman of the Department of Mechatronics Engineering, National Changhua University of Education. From 2018 to 2020, Dr. Lai was the Dean of the General Affair and the Director of the Center of Environmental Protection and Occupational Safety and Health, National Changhua University of Education. Dr. Lai is the Fellow of the ElectroMagnetics Academy and the International Fellow of the Chinese Innovation and Invention Society.

EDUCATION

Ph.D. National Chiao Tung University, Taiwan (1997)

RELEVANT WORK EXPERIENCES

Aug. 2020-Present	Dean, College of Engineering, National Changhua University of Education, Changhua, Taiwan
Feb. 2021-Present	Director, Baoshan Campus Joint Services Center, National Changhua University of Education, Changhua, Taiwan
Aug. 2018-Jul. 2020	Dean, Office of General Affairs, National Changhua University of Education, Changhua, Taiwan
Aug. 2018-Jul. 2020	Director, Center of Environmental Protection and Occupational Safety and Health, National Changhua University of Education, Changhua, Taiwan
Aug. 2012-Jul. 2018	Chair of Department of Mechatronics Engineering, National Changhua

	University of Education, Changhua, Taiwan
Aug. 2012-Jul. 2017	Director, Mechatronic Integration and System Control Research Center, National Changhua University of Education, Changhua, Taiwan

RESEARCH AREAS

1. Internet of Things (IoT)
2. Intelligent Systems
3. Integrated Circuit Design
4. Micro-/Nano-Electromechanical Systems (MEMS/NEMS)
5. Opto-Electronic Materials, Devices, Circuits, and Systems

ACADEMIC AWARDS

1. MOST Special Outstanding Talent Award of National Changhua University of Education, 2021
2. Creation and Invention Award of Bai-Sha Culture and Education Foundation, 2020
3. MOST Special Outstanding Talent Award of National Changhua University of Education, 2020
4. Research and Development Achievement Certificate of Taiwan Innotech Expo 2019 (TIE 2019), 2019
5. Outstanding Faculty Service Award of National Changhua University of Education, 2019
6. Creation and Invention Award of Bai-Sha Culture and Education Foundation, 2019
7. MOST Special Outstanding Talent Award of National Changhua University of Education, 2018
8. Outstanding Faculty Research Award of National Changhua University of Education, 2017
9. Quality Research Award of National Changhua University of Education, 2017
10. Creation and Invention Award of Bai-Sha Culture and Education Foundation, 2017
11. Creation and Invention Award of Bai-Sha Culture and Education Foundation, 2016
12. International Fellow of Chinese Innovation and Invention Society, 2015
13. Nation Academic Award, 2015
14. Academic Research Award of Bai-Sha Culture and Education Foundation, 2014
15. Outstanding Faculty Research Award of National Changhua University of Education, 2011
16. Excellent Teaching Material Award of National Changhua University of Education, 2011
17. Creation and Invention Award of NCUE Culture and Education Foundation, 2010
18. Fellow of the ElectroMagnetics Academy, 2008
19. Outstanding Educator Award of Ministry of Education, Taiwan, 2008
20. Outstanding Faculty Teaching Award of National Changhua University of Education, 2007
21. Excellent Teaching Material Award of National Changhua University of Education, 2007
22. Academic Research Award of NCUE Culture and Education Foundation, 2007
23. Excellent Textbook Recommendation Award of Ministry of Education, Taiwan, 2007
24. Famous Teacher Award of National Changhua University of Education, 2006
25. Excellent Mentor Award of National Changhua University of Education, 2006
26. Creation and Invention Award of NCUE Culture and Education Foundation, 2006
27. Creation and Invention Award of NCUE Culture and Education Foundation, 2005
28. Creation and Invention Award of NCUE Culture and Education Foundation, 2004
29. Marquis Who's Who in the World, 2000
30. Invention Patent Award of Industrial Technology Research Institute, 1998
31. Invention Patent Award of Industrial Technology Research Institute, 1997
32. Outstanding Contribution Award of National Chung-Shan Institute of Science and Technology, 1989

SELECTED JOURNAL PAPERS (2016-2021)

1. **Y.-L. Lai**, Y.-K. Lai*, L.-C. Lan, C.-Y. Zheng, S.-C. Chen, and L.-W. Tseng, "A novel automated guided vehicle for guidance applications," *Journal of Physics: Conf. Ser.*, vol. 2020, Sep. 2021, Art. ID: 012037. (EI)
2. **Y.-L. Lai**, Y.-K. Lai*, S.-Y. Shih, C.-Y. Zheng, and T.-H. Chuang, "Deep-learning object detection for resource recycling," *Journal of Physics: Conf. Ser.*, vol. 1583, Jul. 2020, Art. ID: 012011. (EI)
3. **Y.-L. Lai***, Y.-K. Lai, G.-J. Lee, C.-Y. Zheng, P.-W. Huang, M.-H. Lee, and Y. W. Chiang "Low noise amplifier design for IoT wireless communication systems," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 644, Oct. 2019, Art. ID: 012026. (EI)
4. **Y.-L. Lai***, H.-R. Hsu, Y.-K. Lai, Y.-H. Chou, N.-K. Hsu, and C.-Y. Zheng, "Material analysis and characterization of working electrodes of dye-sensitized solar cells," *MATEC Web Conf.*, vol. 185, Jul. 2018, Art. ID: 00037. (EI)
5. **Y.-L. Lai***, Y.-H. Chou, and L.-C. Chang, "An intelligent IoT emergency vehicle warning system using RFID and Wi-Fi technologies for emergency medical services," Technology and Health Care, vol. 26, no. 1, pp. 43–55, Mar. 2018. (SCIE)
6. **Y.-L.Lai***, H.-R. Hsu, Y.-K. Lai, C.-Y. Zheng, Y.-H. Chou, N.-K. Hsu, and G.-Y. Lung, "Influence of thin film thickness of working electrodes on photovoltaic characteristics of dye-sensitized solar cells," *MATEC Web Conf.*, vol. 123, Sep. 2017, Art. ID: 00030. (EI)
7. **Y.-L. Lai***, Y.-K. Lai, C.-Y. Zheng, G.-H. Xu, Y.-M. Wang, and S.-C. Chen, "Fabrication of working and counter electrodes on plastic substrates for flexible dye-sensitized solar cells," *MATEC Web Conf.*, vol. 123, Sep. 2017, Art. ID: 00031. (EI)
8. **Y.-L. Lai***, L.-W. Chen, and C.-H. Chen, "Processes of titanium-dioxide colloids for working electrodes of dye-sensitized solar cells," *Applied Mechanics and Materials*, vol. 865, pp. 54–59, Apr. 2017. (EI)
9. **Y.-L. Lai***, and L.-Y. Tang, "Advanced fabrication technology of nano-silver dye-sensitized solar cells," *J. Precision Machinery and Manufacturing Technology*, vol. 6, no. 2, pp. 1–10, Dec. 2016.
10. S.-L. Chen*, C.-C. Chen, **Y.-L. Lai**, W.-J. Chiang, and H.-W. Chen, "PL intensity and life-time enhancements of the n-GaN light-emitting diode during the device fabrication," *The Open Materials Science Journal*, vol. 10, no. Suppl-1, M2, pp. 20–28, July 15, 2016. (EI)
11. **Y.-L. Lai*** and C.-C. Chiu, "Nanofabrication of polymer biosensor structures for biomedical applications," *Applied Mechanics and Materials*, vol. 826, pp. 155–159, Feb. 2016. (EI)
12. **Y.-L. Lai***, C.-L. Chen, C.-H. Chang, C.-Y. Hsu, Y.-K. Lai, K.-K. Tseng, C.-C. Chen, and C.-Y. Zheng, "An intelligent health monitoring system using radio-frequency identification technology," *Technology and Health Care*, vol. 24, no. s1, pp. S421–S431, Jan. 2016. (SCIE)
13. C.-L. Chen, **Y.-L. Lai***, C.-C. Chen, C.-Y. Zheng, and L.-C. Chang, "A non-repudiated and intelligent RFID medication safety management system," *Intelligent Automation & Soft Computing*, pp. 1–7, Feb. 2016. (SCIE)
14. C.-Y. Hsu, **Y.-L. Lai***, C.-C. Chen, Y.-T. Lee, K.-K. Tseng, Y.-K. Lai, C.-Y. Zheng, and H.-C. Jheng, "Time sequence image analysis of positron emission tomography using wavelet transformation," *Technology and Health Care*, vol. 24, no. s1, pp. S421–S431, Jan. 2016. (SCIE)