

Development and Application of Artificial Intelligence in Taiwan Poultry Farms

人工智慧於台灣家禽農場的發展與應用

Abstract

Taiwanese poultry houses are gradually changed from outdoor farming to indoor rearing. To provide poultry with suitable growth conditions, many environmental control systems have been installed within poultry houses. In recent years, environmental sensing and automatic control systems have been applied for achieving automated control of the poultry house environment. For today's automated poultry houses, some challenges need to be overcome, such as the risk of disease transmission from wild birds and the need for frequent human access to the poultry houses to monitor the condition of the poultry. This report will provide an introduction and discussion of the technologies developed by our team in recent years. These technologies include: AI laser bird repeller, AI smart weight scale, chicken laser response assessment system, poultry health warning technologies.



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RESEARCH AREAS AND EXPERTISE

- General area: Micromanufacturing and Automation
- Specific area: Sensing, Actuator and AI applications

AWARDS AND RECOGNITION

- Outstanding Teacher in Industry-Academic Collaboration Award, National Chung Hsing University, 2022 and 2023
- Honorable Mention, 2021 CTCI Foundation AI Innovation Competition, 2021
- Guest Editor, Micromachines, Special Issue "NEMS/MEMS Devices and Applications" and "MEMS/NEMS Devices and Applications, 2nd Edition"

Yao-Chuan Tsai is an Associate Professor and Chair in the Department of Bio-Industrial Mechatronics Engineering at National Chung Hsing University (NCHU), Taichung city, Taiwan. He received the B.S. degree in mechanical engineering from National Chiao-Tung University, Hsinchu, Taiwan, in 2004, and the M.S. and Ph.D. degrees in mechanical engineering from National Taiwan University, Taipei, Taiwan, in 2006 and 2011, respectively. He was with a postdoctoral researcher at Tohoku University, Sendai, Japan from 2011 to 2014. From 2014 to 2016, he was with a researcher at MEMS-CORE Co., Ltd., Sendai, Japan.

He was with the faculty as an Assistant Professor at the Department of Bio-Industrial Mechatronics Engineering, National Chung Hsing University, Taichung, Taiwan, in 2016, where he was promoted to an Associate Professor, in 2021. He was with the faculty as a Director at the Agricultural Automation Center, National Chung Hsing University, in 2021. He was with the faculty as a Chair at the Department of Bio-Industrial Mechatronics Engineering at National Chung Hsing University, in 2025. His current research interests include the area of micromachined sensors and actuators and smart agriculture applications.