

# Axiu Mao

Room P5611, AC1, City University of Hong Kong, Kowloon, Hong Kong.

E-mail: [axmao2-c@my.cityu.edu.hk](mailto:axmao2-c@my.cityu.edu.hk) Home Page: <https://max-1234-hub.github.io/>

Tel: (+852)53947055 | (+86)15858213505

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## EDUCATION BACKGROUND

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| <b>Ph.D.</b> | City University of Hong Kong, Hong Kong<br>Jockey Club College of Veterinary Medicine and Life Sciences<br>Department of Infectious Diseases and Public Health   GPA: 3.96<br>Supervisor: Dr. Kai Liu | Oct. 2019 - Present   |
| <b>B.S.</b>  | China Jiliang University, China<br>College of Quality and Safty Engineering<br>Quality Management Engineering   GPA: 3.99/5.00  | Sep. 2015 - Jun. 2019 |

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## PROFESSIONAL EXPERIENCE

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| <b>PT-RA</b> | City University of Hong Kong, Hong Kong<br>Jockey Club College of Veterinary Medicine and Life Sciences<br>Department of Infectious Diseases and Public Health | Sep. 2021 - Present |
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## RESEARCH INTERESTS

Animal Activity Recognition (AAR), Sound Detection, Animal Welfare, Machine Learning, Deep Learning, Wearable Sensors, Internet of Things (IoT)

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## PUBLICATIONS

### Refereed Journal Articles

- [*ANIMALS*] FedAAR: A Novel Federated Learning Framework for Animal Activity Recognition with Wearable Sensors  
**Axiu Mao**, Endai Huang, Haiming Gan, Kai Liu\*  
*Animals*, Aug, **2022**.
- [*COMPAG*] Automated detection and analysis of piglet suckling behaviour using high-accuracy amodal instance segmentation  
Haiming Gan, Mingqiang Ou, Chengpeng Li, Xiarui Wang, Jingfeng Guo, **Axiu Mao**, Maria Camila Ceballos, Thomas D. Parsons, Kai Liu\*, Yueju Xue\*  
*Computers and Electronics in Agriculture*, Aug, **2022**.
- [*J. R. Soc. Interface*] Automated identification of chicken distress vocalisations using deep learning models  
**Axiu Mao**, Claire S. E. Giraudet, Kai Liu\*, Inês De Almeida Nolasco, Zhiqin Xie, Zhixun Xie, Yue Gao,

James Theobald, Devaki Bhatta, Rebecca Stewart, and Alan G. McElligott\*

*Journal of the Royal Society, Jun, 2022.*

4. [COMPAG] Center Clustering Network Improves Piglet Counting Under Occlusion  
Endai Huang, **Axiu Mao**, Haiming Gan, Maria Camila Ceballos, Thomas D. Parsons, Yueju Xue, Kai Liu\*  
*Computers and Electronics in Agriculture, Oct, 2021.*
5. [SENSORS] Cross-Modality Interaction Network for Equine Activity Recognition Using Imbalanced Multi-Modal Data  
**Axiu Mao**, Endai Huang, Haiming Gan, Rebecca S. V. Parkes, Weitao Xu, Kai Liu\*  
*Sensors, Sep, 2021.*

### Conference Proceedings

1. [ECPLF'2022] Uniting farms: Federated learning for sensor-based animal activity recognition  
**Axiu Mao**, Endai Huang, Haiming Gan, and Kai Liu\*  
*10th European Conference on Precision Livestock Farming (ECPLF), accepted but not yet published, 2022.*
2. [ECPLF'2022] Occlusion Resistant Spatial Analysis of Pig Distribution Pattern in Farrowing Pens Using Center Clustering Network  
Endai Huang, **Axiu Mao**, Haiming Gan, and Kai Liu\*  
*10th European Conference on Precision Livestock Farming (ECPLF), accepted but not yet published, 2022.*
3. [ECPLF'2022] Automated Detection and Analysis of Piglet Suckling Behaviour using High-accuracy Amodal Instance Segmentation  
Haiming Gan, Mingqiang Ou, Cheryl Sze, **Axiu Mao**, Kai Liu\*, and Yueju Xue\*  
*10th European Conference on Precision Livestock Farming (ECPLF), accepted but not yet published, 2022.*
4. [ISAEW'2021] Cross-Modality Interaction Network for Equine Activity Recognition Using Time-Series Motion Data  
**Axiu Mao**, Endai Huang, Weitao Xu, Kai Liu\*  
*International Symposium on Animal Environment and Welfare (ISAEW), Oct, 2021.*
5. [ISAEW'2021] A Key Frame Selection Method for Creating Deep Learning Training Set in Animal Research Involving Time-Series Video Data  
Endai Huang, **Axiu Mao**, Haiming Gan, Kai Liu\*  
*International Symposium on Animal Environment and Welfare (ISAEW), Oct, 2021.*
6. [ASABE'2021] Capacity Limit of Deep Learning Methods on Scenarios of Pigs in Farrowing Pen under Occlusion  
Endai Huang, **Axiu Mao**, Maria Camila Ceballos, Thomas D. Parsons, Kai Liu\*  
*ASABE Annual International Virtual Meeting (ASABE), Jul, 2021.*
7. [ACPLF'2020] Deep Learning-based Assessment of Laying-hen Feather Conditions Using Color and Thermal Images

Endai Huang, **Axiu Mao**, Kai Liu\*, Yueju, Xue

*2nd Asian Conference on Precision Livestock Farming (ACPLF), Oct, 2020.*

### **Preprints**

1. Occlusion-Resistant Instance Segmentation of Piglets in Farrowing Pens Using Center Clustering Network

Endai Huang, **Axiu Mao**, Yongjian Wu, Haiming Gan, Maria Camila Ceballos, Thomas D. Parsons, Junhui Hou, Kai Liu\*

*arXiv, <https://arxiv.org/abs/2206.01942>, 2022.*

### **AWARDS AND HONORS**

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- Outstanding Graduate Student Paper and Presentation Award at 2021 International Symposium on Animal Environment and Welfare, Chongqing, China Oct. 2021
- Outstanding Graduates of Zhejiang Province Jun. 2019

### **PROFESSIONAL ACTIVITIES**

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#### **Journal Reviewers**

- PeerJ
- USPLF2023

#### **Conference Presentations**

- ECPLF 2022 2022
- ISAEW 2021 Oct. 2021