Chun-Peng James Chen

CONTACT INFORMATION

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175 West Campus Drive
Virginia Tech
Blacksburg, Virignia 24061 USA

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SUMMARY

I am an assistant professor of animal data sciences in the School of Animal Sciences (SAS) at Virginia Tech. My research interests include deep learning, statistical genetics, and software development. I am particularly interested in developing data-driven stategies for solving real-world problems in precision livestock farming. My research also tightly integrates with indutrial applications. Currently, I am developing computer vision algorithms to model animal behaviors for better animal welfare and management.

EDUCATION

Washington State University, Pullman, Washington, USA   08/2016 - 05/2021
Ph.D., Crop Science
- *Thesis*: A Paradigm Shift in Breeding: From Genomics to Phenomics
- *Advisor*: Dr. Zhiwu Zhang

National Taiwan University, Taipei, Taiwan   09/2010 - 06/2014
B.S., Agronomy

PROFESSIONAL POSITIONS

Assistant Professor
70% Research and 30% Teaching   07/2022 - Present
School of Animal Sciences, Virginia Tech
Blacksburg, Virginia, USA

Assistant Professor
70% Research and 30% Teaching   01/2022 - 06/2022
Department of Animal and Poultry Sciences, Virginia Tech
Blacksburg, Virginia, USA

Postdoctoral Associate
Advisor: Dr. Hao Cheng   03/2021 - 12/2021
Department of Animal Science, University of California, Davis
Davis, California, USA

AFFILIATED POSITIONS

Affiliated Faculty Member   01/2022 - Present
Center for Advanced Innovation in Agriculture (CAIA)
Virginia Polytechnic Institute and State University
Blacksburg, Virginia USA

WORK EXPERIENCE

Graduate Research Assistant   08/2016 - 12/2020
Department of Crop and Soil Sciences
Washington State University
Pullman, Washington, USA

Biostatistician Intern   06/2019 - 08/2019
Department of Research and Development
BASF
West Sacramento, California, USA

Research Assistant   04/2016 - 06/2016
Institute of Plant and Microbial Biology
Academia Sinica
Taipei, Taiwan

Data Analyst   10/2015 - 03/2016
Yu-Shun International Cultural CO., LTD
Taipei, Taiwan

Corporal   10/2014 - 09/2015
564 Armor Brigade, 8th Army Corps
Republic of China Army
Taipei, Taiwan

EDITORIAL ACTIVITIES

Ad Hoc Reviewer
- Number of manuscripts reviewed per journal: Bioinformatics (1), Crop & Pasture Science (1), Frontier in Genetics (1), Journal of Animal Science (1), Journal of Dairy Science (1), and PLoS One (1)
- Number of manuscripts reviewed per year: 2018(1), 2019(2), 2021(1), 2022(2)

GRANTS DIRECTED OR CO-DIRECTED

Center for Advanced Innovation in Agriculture (CAIA) and   03/2022 - 06/2022
the Commonwealth CyberInitiative Southwest Virginia node (CCI SWVA) $4,000
Role: Principal Investigator
Agricultural Leadership for Cyberbiosecurity: A Teaching Case Study

Washington Wheat Foundation   11/2018 - 07/2019
Role: Principal Investigator $3,238
Instant and non-destructive prediction of wheat Hagberg falling number from hyperspectral imaging by using parallel computation with graphics processing units (GPU)

PUBLICATIONS

Peer-Reviewed Research Journal Articles

8. **Chen, C. P. J.**, G. Morota, K. Lee, Z. Zhang, and H. Cheng, 2022 VTag: a semi-supervised pipeline for tracking pig activity with a single top-view camera. Journal of Animal Science **100**

7. **Chen, C. J.**, D. Garrick, R. Fernando, E. Karaman, C. Stricker, M. Keehan, and H. Cheng, 2022a XSim version 2: simulation of modern breeding programs. G3 Genes|Genomes|Genetics **12**

6. Hu, Y., S. M. Sjoberg, **Chen, C. J.**, A. L. Hauvermale, C. F. Morris, S. R. Delwiche, A. E. Cannon, C. M. Steber, and Z. Zhang, 2022 As the number falls, alternatives to the Hagberg–Perten falling number method: A review. Comprehensive Reviews in Food Science and Food Safety **21**: 2105–2117

5. Tang, Z., A. Parajuli, **Chen, C. J.**, Y. Hu, S. Revolinski, C. A. Medina, S. Lin, Z. Zhang, and L.-X. Yu, 2021 Validation of UAV-based alfalfa biomass predictability using photogrammetry with fully automatic plot segmentation. Scientific Reports **11**: 3336

4. **Chen, C. J.** and Z. Zhang, 2020 GRID: A Python Package for Field Plot Phenotyping Using Aerial Images. Remote Sensing **12**: 1697

3. Liu, L., J. Zhou, **Chen, C. J.**, J. Zhang, W. Wen, J. Tian, Z. Zhang, and Y. Gu, 2020 GWAS-Based Identification of New Loci for Milk Yield, Fat, and Protein in Holstein Cattle. Animals **10**: 2048

2. Zhou, J., L. Liu, **Chen, C. J.**, M. Zhang, X. Lu, Z. Zhang, X. Huang, and Y. Shi, 2019 Genome-wide association study of milk and reproductive traits in dual-purpose Xinjiang Brown cattle. BMC Genomics **20**: 827

1. **Chen, C. J.** and Z. Zhang, 2018b iPat: intelligent prediction and association tool for genomic research. Bioinformatics **34**: 1925–1927

Peer-Reviewed Conference Proceedings

2. **Chen, C. J.**, G. Morota, and H. Cheng, 2022b VTag: Automatic pipeline to annotate video data for pig phenomics studies. The 12th World Congress of Genetics Applied to Livestock Production, Rotterdam, Netherlands

1. **Chen, C. J.** and Z. Zhang, 2018a GWAS and GS Are as Easy as Clicking and Dragging with iPat. The 11th World Congress of Genetics Applied to Livestock Production, Auckland, New Zealand

DEVELOPED SOFTWARE

4. **VTag: a semi-supervised pipeline for tracking pig activity with a single top-view camera**

   - Publication on *JAS*: https://doi.org/10.1093/jas/skac147
   - GitHub Repository: https://github.com/vt-ads/vtag

3. **XSimV2: A fast and user-friendly tool to simulate sequence data and complicated pedigree structures**

   - Publication on *G3*: https://doi.org/10.1093/g3journal/jkac032
   - GitHub Repository: https://github.com/reworkhow/XSim.jl
   - Documentation: https://reworkhow.github.io/XSim.jl/index.html

2. **GRID: A Python Package for Aerial High-Throughput Phenotyping**

   - Publication on *Remote Sensing*: https://doi.org/10.3390/rs12111697
   - GitHub Repository: https://github.com/Poissonfish/GRID
   - Software Page: http://zzlab.net/GRID
   - Documentation: https://poissonfish.github.io/GRID/index.html

1. **iPat: Intelligent Tool for Prediction and Association**

   - Publication on *Bioinformatics*: https://doi.org/10.1093/bioinformatics/bty015
   - GitHub Repository: https://github.com/Poissonfish/iPat
   - Software Page: http://zzlab.net/iPat
   - Documentation: https://poissonfish.github.io/iPat/index.html

PRESENTATIONS

Conference Presentations

11. **The 12th World Congress on Genetics Applied to Livestock Production (WCGALP)**   07/2022
    Rotterdam, The Netherlands
    VTag: Automatic pipeline to annotate video data for pig phenomics studies

10. **American Dairy Science Association (ADSA) Annual Meeting**   06/2022
    Kansas City, Missouri, USA
    Evaluation of Walking Activity Data During Pregnancy as an Indicator of Pregnancy Loss in Dairy Cattle

9. **National Animal Genome Research Program (NRSP8)**   04/2022
    San Diego, California, USA
    VTag: a Semi-Supervised Pipeline for Tracking Pig Activity with a Single Top-View Camera

8. **Plant and Animal Genome (PAG) XXVIII**   01/2020
    San Diego, California, USA
    GRID: a Python Package for Aerial High-Throughput Phenotyping

7. **Wheat Quality Council**   01/2019
    Spokane, Washington, USA
    Toward Instant, Non-Destructive Prediction of Wheat Hagberg-Perten Falling Number

6. **Plant and Animal Genome (PAG) XXVII**   01/2019
    San Diego, California, USA
    Toward Instant, Non-Destructive Prediction of Wheat Hagberg-Perten Falling Number

5. **Plant and Animal Genome (PAG) XXVII**   01/2019
    San Diego, California, USA
    iPat: A Genomics Analysis Tool for Everyone

4. **The 11th World Congress on Genetics Applied to Livestock Production (WCGALP)**   02/2018
    Auckland, New Zealand
    GWAS and GS are as easy as clicking and dragging with iPat

3. **Plant and Animal Genome (PAG) XXVI**   01/2018
    San Diego, California, USA
    iPat: Intelligent Prediction and Association Tool for Genomic Research

2. **Plant and Animal Genome (PAG) Asia**   05/2017
    Seoul, korea
    iPat, a Versatile Tool for Genomics Studies

1. **Plant and Animal Genome (PAG) Asia**   05/2017
    Seoul, korea
    Segregation Analysis and Its Implementation in iPat

Intramural Seminars

Virginia Tech	6. **Animal and Poultry Sciences Seminar** Leveraging Activity Data to Improve Pregnancy Diagnoses and Herd Assessments	03/2022
UC Davis	5. **Animal Science Seminar** VTag: a Semi-Supervised Pipeline for Tracking Pig Activity with a Single Top-View Camera	12/2021
Washington State University	4. **Crop Sciences Ph.D. Exit Seminar** A Paradigm Shift in Breeding: From Genomics to Phenomics	04/2021
	3. **Plant Sciences Retreat** GRID: a Python Package for Aerial High-Throughput Phenotyping	02/2021
	2. **Plant Sciences Retreat** GWAS and GS are as easy as clicking and dragging with iPat	03/2018
	1. **Crop Sciences Ph.D. Proposal Seminar** Application of Random Forest in Genomics Selection	11/2017

TEACHING

Lead Lectures	**APSC-5984 Special Study: Agriculture Data Science** Virginia Tech	01/2023 - 05/2023
Short Courses	**Modern Programming in Genome to Phenome** Co-instructors: Dr. Rohan Fernando and Dr. Hao Cheng University of California, Davis	08/2022
Guest Lectures	**CropS 545 Statistical Genomics** Introduction to Machine Learning and Ensemble Methods Instructor: Dr. Zhiwu Zhang Washington State University	05/2018
	CropS 545 Statistical Genomics Principal Component Analysis Instructor: Dr. Zhiwu Zhang Washington State University	02/2017