

# Sky (Kehan) Sheng

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## About Me

I'm passionate about using AI to empower marginalized communities and address real-world challenges. As a PhD candidate at UBC animal welfare program and a collaborator at TrustML, I conduct interdisciplinary research bridging **AI bias, data science, and animal welfare science**. My previous research includes automated dairy cow behavior and disease monitoring. Currently, I explore biases and transparency issues in generative AI. I believe it's crucial that we don't lose the voices of those not in power and making them invisible behind numeric machines through coded gaze. I strive to make my research fully reproducible and accessible to all.

## Education

2020/9 –

Present

**University of British Columbia** – Vancouver, BC, Canada

*PhD in Applied Animal Biology X Data Science*

*Research Collaborator at TrustML*

Supervisors: Dr. Marina von Keyserlingk, Dr. Dan Weary, Dr. Tiffany Timbers

Areas: Animal Welfare Science, Data Science, Computer Science and Statistics

Average: 91%

Relevant Coursework: Machine Learning and Data Mining, Algorithms and Data Structures, Linear Algebra

2017/9 – 2020/5

**University of Wisconsin - Madison** – Madison, WI, USA

*Bachelor of Science in Animal Science*

*Certificate in Computer Science*

Supervisors: Dr. Guilherme Rosa, Dr. Jennifer Van Os

GPA: 3.97/4.0

Honors: Dean's List (2017-2020), Distinctive Scholastic Achievement

Relevant Coursework: Matrix Methods in Machine Learning, Programming in Java, Human Computer Interactions, Discrete Mathematics, Introduction to Computer Engineering, Statistics and Computation in R

## Publications

- 2026    **”The Guardian is credible but leans towards opinion”: Shadow mechanisms in GPT-5’s web search and the politics of credibility**  
Terzis, P., **Sheng, K.**, Sax, M., van Drunen, M., Sokol-Snyder, R., de León, E., Biega, A.  
*Submitted*
- 2025    **The erasure of intensive livestock farming in text-to-image generative AI**  
**Sheng, K.**, Tuytens, F.A.M., von Keyserlingk, M.A.G.  
*arXiv preprint:2502.19771. <https://doi.org/10.48550/arXiv.2502.19771>*
- 2025    **Redefining Lameness Assessment: Constructing Lameness Hierarchy using Crowd-Sourced Data**  
**Sheng, K.**, Foris, B., von Keyserlingk, M.A.G., Timbers, T.A., Cabrera, V., Weary, D.M.  
*Computers and Electronics in Agriculture. <https://doi.org/10.1016/j.compag.2025.110206>*
- 2024    **Redefining dominance calculation: Increased competition flattens the dominance hierarchy in dairy cows**  
**Sheng, K.**, Foris, B., Krahn, J., Weary, D.M., von Keyserlingk, M.A.G.  
*Journal of Dairy Science, 107(9): 7286-7298. <https://doi.org/10.3168/jds.2023-24587>*
- 2023    **Crowd sourcing remote comparative lameness assessments for dairy cattle**  
**Sheng, K.**, Foris, B., von Keyserlingk, M.A.G., Gardenier, J., Clark, C., Weary, D.M.  
*Journal of Dairy Science, 106(8): 5715-5722. <https://doi.org/10.3168/jds.2022-22737>*
- 2025    **AI for One Welfare: the role of animal welfare scientists in developing valid and ethical AI-based welfare assessment tools**  
Foris, B., **Sheng, K.**, Dürnberger, C., Oczak, M., Rault, J.L.  
*Frontiers in Veterinary Science, 12. <https://doi.org/10.3389/fvets.2025.1645901>*
- 2024    **Automated, longitudinal measures of drinking behavior provide insights into the social hierarchy in dairy cows**  
Foris, B., Vandresen, B., **Sheng, K.**, Krahn, J., Weary, D.M., von Keyserlingk, M.A.G.  
*JDS Communications, 5(5): 411-415. <https://doi.org/10.3168/jdsc.2023-0487>*
- 2024    **Effects of group size on agonistic interactions in dairy cows: a descriptive study**  
Krahn, J., Foris, B., **Sheng, K.**, Weary, D.M., von Keyserlingk, M.A.G.  
*Animal, 18(3): 101083. <https://doi.org/10.1016/j.animal.2024.101083>*

## Conference Publications

- 2025 **The erasure of intensive livestock farming in text-to-image generative AI** (Oral Presentation)  
**Sheng, K.**, Tuyttens, F.A.M., von Keyserlingk, M.A.G.  
*ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*, Athens, Greece.
- 2024 **Redefining lameness assessment using crowd-sourced data** (Oral Presentation)  
**Sheng, K.**, Foris, B., von Keyserlingk, M.A.G., Timbers, T.A., Cabrera, V., Weary, D.M.  
*The 75th European Federation for Animal Science (EAAP) Annual Meeting*, Florence, Italy.
- 2024 **Cow welfare assessment using ChatGPT Vision** (Poster Presentation)  
**Sheng, K.**, Heydarirad, M., Foris, B.  
*The 9th International Conference on the Welfare Assessment of Animals at Farm Level (WAFL)*, Florence, Italy.
- 2024 **Automatically monitoring dyadic relationships in dairy cows** (Oral Presentation)  
Foris, B., **Sheng, K.**, Weary, D.M., von Keyserlingk, M.A.G.  
*The 75th European Federation for Animal Science (EAAP) Annual Meeting*, Florence, Italy.
- 2023 **Remote Comparative Lameness Assessment in Dairy Cattle: A Crowdsourcing Approach** (Oral Presentation)  
**Sheng, K.**, Foris, B., von Keyserlingk, M.A.G., Gardenier, J., Clark, C., Weary, D.M.  
*The American Dairy Science Association (ADSA) Annual Meeting*, Montreal, QC, Canada.
- 2023 **Effect of group composition on agonistic interactions received by subordinate cows: A pilot study** (Poster Presentation)  
Krahn, J., Foris, B., **Sheng, K.**, Weary, D.M., von Keyserlingk, M.A.G.  
*The American Dairy Science Association (ADSA) Annual Meeting*, Montreal, QC, Canada.
- 2022 **The Effects of Competition at the Feeder on Dominance in Dairy Cows** (Oral Presentation)  
**Sheng, K.**, Foris, B., Krahn, J., Weary, D.M., von Keyserlingk, M.A.G.  
*The 73th European Federation for Animal Science (EAAP) Annual Meeting*, Porto, Portugal.

- 2022    **Effects of group size on the social experience of dairy cows** (Poster Presentation)  
Krahn, J., Foris, B., **Sheng, K.**, Weary, D.M., von Keyserlingk, M.A.G.  
*The 55th Congress of the International Society of Applied Ethology (ISAE)*, Ohrid, North Macedonia.
- 2019    **Behavioral response of dairy cows after subcutaneous insertion of real-time temperature detecting biosensor: A pilot study** (Poster Presentation)  
**Sheng, K.**, Reuscher, K., Chung, H., Choi, C., Kim, Y., Brounts, S., Van Os, J.  
*The American Dairy Science Association (ADSA) Annual Meeting*, Cincinnati, OH, USA.

## Open-source Projects

- 2025/2 – 2025/6    **R package: moo4feed**   
An R package to extract individual-level traits from feeding and drinking data collected by precision livestock farming systems, supporting reproducible and scalable animal welfare research.
- 2024/12 – present    **AI Agent System Prompts & Rules**   
Production-tested system prompts and rules for AI agents across domains, enabling reliable collaboration and efficient task completion using Cursor and Claude LLMs.
- 2024/10 – 2025/2    **AI's representation bias about livestock farming**   
Investigated representation bias in text-to-image generative AI, revealing the automated prompt revision process could erase the reality of controversial topics, and reinforces common misconceptions. The analysis is fully reproducible via a customized Docker image and GNU Make workflow.
- 2023/1 – 2024/3    **Competition Dominance Analysis**   
Used a Bayesian statistical framework to show that high feed competition flattens dominance hierarchies in dairy cattle. Developed an algorithm to automatically detect displacement behaviors, and monitor dominance hierarchy over time.
- 2023/7 – 2025/2    **Lameness Hierarchy**   
Developed a novel lameness assessment tool using crowd-sourcing (Amazon MTurk) and a Bayesian Elo-rating system, similar to the LLM chatbot arena. Untrained workers achieved expert-level accuracy in pairwise comparisons of cow videos, providing a scalable and cost-effective method for early lameness detection.

2024/2 – 2024/7

### **Welfare Assessment using GPT-4o**

Evaluated cattle cleanliness through automated image analysis using GPT-4o and the Segment Anything Model (SAM). Explored various prompting and image processing techniques, finding that image segmentation improved model performance the most.

2022/9 –

### **Lameness Prediction through Machine Learning**

2022/12

Applied various machine learning models to predict lameness in dairy cows from behavioral data. The study demonstrated that data preprocessing techniques, such as balanced sampling, significantly improved predictive accuracy for early detection.

*Note: This GitHub repository is private as the associated paper has not been published yet. Please email me to request private access.*

## Research Funding

*Total research funding secured: \$74,975 CAD*

2024 – 2025 Mary and David Macaree Fellowship (\$3,195 CAD)

*Research on crowd-sourced pairwise lameness assessment for dairy cattle.*

2024 – 2025 Pei-Huang Tung and Tan-Wen Tung Graduate Fellowship (\$3,550 CAD)

*Research on developing novel lameness assessment methods using Elo-rating.*

2024 – 2025 Hugo E Meilicke Memorial Fellowship (\$12,450 CAD)

*Research on automated methods for cattle lameness detection.*

2023 – 2024 John and Mary Young Scholarship (\$1,825 CAD)

*Development of automated system for behavioral monitoring.*

2023 – 2024 Elizabeth R Howland Fellowship Award (\$1,761 CAD)

*Research on cattle behavioral plasticity and personality.*

2022 – 2023 Wilson Henderson Fellowship (\$12,250 CAD)

*Research on comparative lameness assessment methods.*

2022 – 2023 Elizabeth R Howland Fellowship Award (\$2,872 CAD)

2021 – 2022 James A. Shelford Memorial Scholarship (\$1,380 CAD)

2021 – 2022 Pei-Huang Tung and Tan-Wen Tung Graduate Fellowship (\$16,000 CAD)

2020 – 2021 Elizabeth R Howland Fellowship (\$16,000 CAD)

2020 – 2021 James A. Shelford Memorial Scholarship (\$971 CAD)

2019 – 2020 Farrington Undergraduate Research Award (\$2,000 USD)

*Research on behavioral responses of dairy cows to temperature monitoring devices*

## Honors, Awards and Scholarships

*Total scholarship awarded: \$48,934 CAD*

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|-------------|--|
| 2025        | Elizabeth R Howland Fellowship (\$2,428 CAD)   |
| 2025        | James Arthur and Helen Mary Shelford Memorial Scholarship (\$750 CAD)  |
| 2025        | ACM Conference on Fairness, Accountability, and Transparency (FAccT) Travel Grant (\$1308.2 USD)   |
| 2025        | Outstanding UBC Master of Data Science (MDS) TA Award  |
| 2025        | UBC Land and Food Systems Graduate Student Conference – <b>Second Place</b> in Oral Presentation (\$125 CAD)   |
| 2024        | pyOpenSci Fall Festival Scholarship (\$350 CAD)  |
| 2024        | Ursula Knight Abbott Travel Scholarship (\$1,750 CAD)  |
| 2022 – 2025 | President's Academic Excellence Initiative PhD Award (Total: \$4,985 CAD)<br><i>Awarded for 4 consecutive terms (\$950 – 1080 CAD per winter term, \$350 – 500 CAD per summer term)</i>  |
| 2022        | Ursula Knight Abbott Travel Scholarship (\$1,500 CAD)  |
| 2022        | Graduate Student Travel Award (\$500 CAD)  |
| 2022        | EAAP Early Career Researcher Award – <b>First Place</b> in Oral Presentation   |
| 2021        | Dairy Farmers of Canada My Dairy Research Student Competition – <b>First Place</b> (\$1,500 CAD)<br><i>Won for innovative research and animated video presentation on cattle lameness detection: <a href="#">Cyborg Lameness Assessors</a></i> |
| 2020 – 2025 | International Tuition Award (Total: \$18,128 CAD)<br><i>Awarded for 10 consecutive terms (\$2,133 CAD per winter term, \$1,066 CAD per summer term)</i>  |
| 2022 – 2025 | Animal Welfare Program Travel Award (Total: \$4,000 CAD)<br><i>Awarded for 4 consecutive years (\$1,000 CAD per accepted conference)</i>   |
| 2020        | College of Agricultural and Life Sciences Senior Award (\$500 USD)<br><i>Recognition as one of five outstanding senior students</i>  |
| 2020        | Farm Credit/MANRRS VIP Scholarship (\$2,000 USD)<br><i>Recognition for outstanding minorities in agriculture</i>   |
| 2019        | Dorothy Strong Scholarship (\$1,500 USD)   |
| 2019        | ADSA Undergrad Research Poster Competition – <b>Third Place</b> (\$50 USD)   |
| 2019        | Agriculture Future of America Leaders Scholarship (\$1,000 USD)  |
| 2018        | Ruth and Carl Miller Academic Merit Award (\$1,125 USD)  |
| 2018        | Agriculture Future of America Travel Grant (\$1,000 USD)   |
| 2017 – 2020 | University of Wisconsin-Madison Dean's List<br><i>Awarded consecutively for three years</i>  |
| 2015        | ShanghaiTech Small Satellite Design Competition – <b>Third Place</b> (1,000 CNY)   |
| 2015        | Extraordinary Student Scholarship (6,250 CNY)  |

2015 National English Speech Competition – **Third Place**

## Teaching Experience

- Spring 2026 **Instructor, Python Vibe Coding Tutorial: AI Bias in Text-to-Image Generative AI**  
*UBC Extended Learning Course: Programming in Python for Data Science*  
Delivered a lecture about responsible genAI use, demonstrated by building a bias evaluation tool for text-to-image models in Cursor, demonstrating Python best practices and the power of system prompts.
- Fall 2025 **Lecturer, DSCI 522: Reproducible and Trustworthy Data Science Workflows**  
*University of British Columbia Master of Data Science Program (UBC MDS)*  
Teaching reproducible and trustworthy data science workflows, focusing on reproducibility, project management, version control, Docker containers, and automated workflows.
- Fall 2025 **Lecturer, DSCI 571: Supervised Machine Learning**  
*UBC MDS*  
Teaching supervised machine learning, including topics like multi-class classification, logistic regression, decision trees, random forests, and SVM.
- Summer 2025 **Instructor, Data Science for Kids Summer Camp**  
*Vancouver Independent School of Science and Technology (VISST)*  
Designed and taught an introduction to data science workshop for kids, making AI (Anthropic Claude) and data science accessible and fun for young learners. The topics include Claude AI assisted programming, introduction to programming (if-else conditions, for loops), statistical inference (sampling, bootstrapping), data visualization and analysis, K-nearest neighbor, and AI ethics.
- Summer 2025 **Mentor, Data Science for Girls Summer Camp**  
*University of British Columbia (UBC)*  
Mentored participants in a summer camp focused on introducing girls to data science, fostering diversity and inclusion in STEM fields through hands-on learning experiences.

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| Spring 2025 | <b>Tutorial Instructor, AI Tools Playground: Responsible Use of Generative AI</b><br><i>UBC</i>   |
|             | Designed and taught a comprehensive AI literacy workshop for graduate students, covering UBC-approved AI platforms (ChatGPT, Microsoft Copilot), advanced coding assistance, LLM evaluation and selection, text-to-image generation, and strategic prompt engineering. Workshop emphasized "AI as copilot, not autopilot" philosophy, and responsible AI usage including privacy concerns, institutional policies, bias detection, and ethical considerations.  |
| Spring 2025 | <b>Guest Lecturer, Career Exploration Course</b><br><i>VISST</i>  |
|             | Taught a lecture about AI bias and animal welfare focusing on the topic of "How AI Sees Farm Animals: Whose Stories Are Lost?".   |
| Spring 2025 | <b>Tutorial Instructor, Tutorial on Linux Command Using Amazon Web Services (AWS) Elastic Compute Cloud (EC2)</b><br><i>UBC MDS</i>   |
|             | Designed and taught a hands-on AWS EC2 tutorial where participants learned to set up EC2 instances, use SSH with key-based authentication, and master Linux commands through a creative rescue mission. Students helped free Ollie the Otter from a digital dungeon using Linux commands for directory navigation, permission changes, and file management in a cloud environment. This approach made technical concepts stick as participants solved problems with purpose, turning dry command-line instructions into a memorable adventure with Ollie in AWS infrastructure. Tutorial enrollment: 40 students. |
| Spring 2025 | <b>Teaching Assistant, DSCI 525: Web and Cloud Computing</b><br><i>UBC MDS</i>  |
|             | Supported student learning in cloud computing, parallel computing, and APIs. Assisted students in exploring web services for scalable computing, web publication, web hosting, and data collection. Course enrollment: 116 students.  |
| Spring 2025 | <b>Teaching Assistant, DSCI 553: Statistical Inference and Computation II</b><br><i>UBC MDS</i>   |
|             | Guided students in learning prior-to-posterior Bayesian paradigm, focusing on multiple hypothesis testing, false discovery rate, and two-group comparisons. Course enrollment: 116 students.  |

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| Spring 2025     | <b>Teaching Assistant, DSCI 524: Collaborative Software Development</b><br><i>UBC MDS</i><br>Instructed on collaborative software development techniques, including software life cycle, unit testing, continuous integration, python packaging and R packaging for distribution. Course enrollment: 116 students.  |
| Fall 2024       | <b>Teaching Assistant, DSCI 522: Data Science Workflows</b><br><i>UBC MDS</i><br>Guided students through building reproducible and trustworthy data science workflow, focusing on reproducibility, project management, version control, the use of Docker container, and automated workflows. Course enrollment: 116 students.  |
| Fall 2024       | <b>Teaching Assistant, DSCI 552: Statistical Inference and Computation I</b><br><i>UBC MDS</i><br>Supported students in understanding foundations of frequentist statistical inference, simulation-based approaches and computations. Course enrollment: 116 students.  |
| Fall 2024       | <b>Guest Lecturer, CCV868: Special Topics in Veterinary Clinics and Surgery</b><br><i>Universidade Federal de Minas Gerais</i><br>Delivered lecture on "Lameness in Dairy Cows: Causes, Detection, and Ethical Dilemmas in an Intensive System". Lecture focused on automated lameness detection methods. Course enrollment: 16 students.   |
| Spring 2024     | <b>Guest Lecturer, APBI 315: Animal Welfare and Ethics of Animal Use</b><br><i>UBC</i><br>Delivered lecture on AI's bias about livestock farming. Course enrollment: 100 students.  |
| 2023/4 – 2024/8 | <b>Instructor, Machine Learning and AI Summer Camp</b><br><i>VISST</i><br>Taught high school students (11-16 years old) an introduction to machine learning for two consecutive summers, covering concepts like decision trees, metrics, computer vision, natural language processing, reinforcement learning, generative AI and AI ethics. Developed engaging curriculum to make complex AI concepts accessible to young learners. |
| Fall 2021       | <b>Teaching Assistant, APBI 314: Animals and Society</b><br><i>UBC</i><br>Assistant student learning on the welfare of wildlife, livestock and lab animals. Managed weekly discussions and student assignments. Course enrollment: 96 students.   |

## Employment

|                     |   |
|---------------------|---|
| 2025/9 –<br>2025/12 | <b>Master of Data Science, University of British Columbia (Department of Statistics)</b><br><br>Sessional Lecturer – Vancouver, BC, Canada <ul style="list-style-type: none"><li>• DSCI 522: reproducible workflows, project management, version control, Docker, GNU Make automation.</li><li>• DSCI 571: supervised ML (multiclass classification, logistic regression, decision trees, random forests, SVM).</li></ul>   |
| 2024/10 –<br>2025/4 | <b>Master of Data Science, University of British Columbia (Department of Statistics)</b><br><br>Teaching Assistant – Vancouver, BC, Canada <ul style="list-style-type: none"><li>• Supported student learning: [1] reproducible and trustworthy workflows. [2] frequentist statistics and simulation-based methods. [3] web/cloud computing, parallel computing, APIs. [4] Bayesian statistics. [5] software lifecycle, unit testing, CICD, packaging (Python/R).</li></ul>   |
| 2023/4 –<br>present | <b>Vancouver Independent School of Science and Technology</b><br><b>Machine Learning, AI and Data Science Instructor</b> – Vancouver, BC, Canada <ul style="list-style-type: none"><li>• Taught high school students (11-16 years old) an introduction to machine learning for 3 consecutive summers, covering concepts like generative AI, AI ethics, decision trees, metrics, computer vision, natural language processing, reinforcement learning, statistical inference, introduction to programming, and data visualization.</li></ul>   |
| 2018/9 – 2020/7     | <b>Dairy Science Department, University of Wisconsin-Madison</b><br><b>Undergraduate Research Assistant</b> – Madison, WI, United States <ul style="list-style-type: none"><li>• Created an R script to analyze standing and lying behavior of dairy cows using HOBO data logger. Upgraded lying and standing analysis algorithms in SAS.</li><li>• Evaluated behavioral responses of dairy cows after subcutaneous insertion of real-time temperature detecting microchips.</li><li>• Conducted behavioral observations and respiration rate recordings.</li><li>• Performed rigorous data cleaning, error checking, and data loading.</li><li>• Worked under the supervision of Principal Investigator Jennifer Van Os, Ph.D.</li></ul> |

2019/5 – 2019/7

### **StoneX Group Inc.**

Data Analyst Intern – Financial Sector – Kansas City, MO, United States

- Created a color gradient map in R to visualize planting delay degrees, supporting market analysis for agricultural trading.
- Developed an Excel VBA tool to automate trade information uploads to an SQL database, improving data entry efficiency.
- Gained experience in big data analytics, data cleaning, and financial data visualization.

2017/11 – **Large Animal Veterinary Hospital, University of Wisconsin-Madison**

2018/7 Barn Crew Member – Madison, WI, United States

- Performed animal health observation, cleaned stalls, and fed animals daily.
- Gained hand-dripping and machine milking experience with dairy cows.
- Handled various animals including cows, horses, donkeys, camels, sheep, and pigs.

2017/10 – **Wisconsin National Primate Research Center**

2018/4 Colony Management Member – Madison, WI, United States

- Administered medication treatments, including drawing blood samples and performing intramuscular and subcutaneous injections to macaques.
- Fed infant and adult macaques, cleaned cages, checked drinkers and IDs, and performed daily animal health observations.

2017/5 – 2017/7

### **Education First**

Marketing Intern & Group Leader – Yantai, Shandong, China

- Talked with potential customers and advertised English education products.
- Taught team members how to identify target customers, explore customer needs, and respond to customer inquiries.

## **Presentations without Conference Proceedings**

- 2025 **Advances in Dairy Technology and Data-Driven Innovation**  
*Food Tech Forum (Invited Panel Discussion)*, Langley, BC, Canada  
Invited panel discussion organized by Canadian Agri-Food Automation and Intelligence Network (CAAIN).
- 2025 **Redefining the Future of Canadian Dairy: When Cows Meet Data and AI**  
*UBC Dairy Education and Research Centre (Student Representative Oral Presentation)*, Agassiz, BC, Canada  
Celebrating Farm Credit Canada's \$1M donation to UBC DERC's integrated data hub.

- 2025 The erasure of intensive livestock farming in text-to-image generative AI  
*Vancouver Vision & Learning Workshop @ International Conference on Machine Learning (ICML)*, Vancouver, BC, Canada
- 2025 The erasure of intensive livestock farming in text-to-image generative AI  
*CAIDA/TrustML 2025 ICML Visits*, Vancouver, BC, Canada
- 2025 The erasure of intensive livestock farming in text-to-image generative AI  
*UBC LFS Graduate Student Conference*, Vancouver, BC, Canada
- 2025 Using LLMs During your Learning Journey and Beyond  
*University of British Columbia Master of Data Science Program Orientation*, Vancouver, BC, Canada
- 2025 How AI Sees Farm Animals: Whose Stories Are Lost?  
*Evergreen College Visit to UBC*, Vancouver, BC, Canada
- 2024 **Technology on Dairy Farms and Animal Welfare: Framing and Potential**  
*International Dairy Federation (IDF) Webinar Series (Invited Presentation)*, Virtual
- 2023 Automatic Longitudinal Lameness Assessment for Dairy Cows  
*Western Canadian Certified Hoof Trimmers Associations Meeting (Invited Presentation)*, Red Deer, AB, Canada
- 2023 AI for Animal Welfare  
*Evergreen College Visit to UBC*, Vancouver, BC, Canada
- 2023 **Comparative Lameness Assessments for Dairy Cows on Amazon**  
*UBC-Animal Welfare Program Industrial Research Chair (IRC) Meeting*, Virtual
- 2023 Identifying Lame Cows through Crowd-Sourcing  
*Chinese Animal Welfare Conference (Invited Presentation)*, Chongqing, Changsha, China
- 2023 **Lameness Hierarchy of Dairy Cows**  
*UBC-Animal Welfare Program Industrial Research Chair (IRC) Meeting*, Vancouver, BC, Canada
- 2023 Lameness Assessment of Dairy Cows  
*Prime Acres Open Farm Day*, Abbotsford, BC, Canada
- 2022 The Impact of Resource Competition on the Dominance Hierarchy of Dairy Cows  
*International Farm Animal Welfare Fellowship (IFAWF) Webinar (Invited Presentation)*, Virtual

- 2021 Cyborg Lameness Assessors for Dairy Cows  
*UBC LFS Graduate Student Conference*, Vancouver, BC, Canada
- 2021 **Cyborg Lameness Assessors: Is This the Future for Dairy Cattle Lameness Assessments?**  
*Dairy Farmers of Canada My Dairy Research Student Competition*, Virtual
- 2020 Improve Dairy Cattle Welfare with the Use of Technology  
*Evergreen College Visit to UBC*, Vancouver, BC, Canada
- 2020 Lameness Detection with the Use of Amazon MTurk  
*UBC-Animal Welfare Program Industrial Research Chair (IRC) Meeting*, Vancouver, BC, Canada
- 2019 Behavioral Responses of Dairy Cows After Subcutaneous Insertion of Real-Time Temperature Detecting Microchips  
*University of Wisconsin-Madison Animal Science Department Meetings & Undergraduate Research Symposium*, Madison, WI, United States
- 2019 Opportunities in the US Agriculture Industry  
*University of Wisconsin-Madison CSSA Meeting (Invited Presentation)*, Madison, WI, United States

## Podcast Interviews

- 2025/12 **Welfare Wednesdays**  
*UBC PAW Club: episode 14*, Interviewed by Mahshid Heydarirad  
 Discussed how AI is biased and erased the reality of intensive livestock farming.
- 2024/12 **Exploring Agritech, Data Standards, and Improved Animal Welfare**  
*The Livestock Podcast: Episode 21*, Interviewed by Daniel Foy, the CEO of AgriGate  
 Discussed potential benefits and risks of using AI and Precision Livestock Farming (PLF) to automate animal welfare assessment. This podcast was the top 5 most popular ones on the platform in 2024, reached key stakeholders in agricultural technology and animal science.
- 2024/6 **Evaluating Common Practices in Pig and Dairy Farming from an Animal Welfare Perspective**  
*The Road of Tomorrow Podcast: vol.67*, Interviewed by Jing Feng  
 Explored controversial practices in modern farming, and addressed ethical and practical aspects of animal husbandry. Podcast reached over 10,600 listeners in 4 months.

## Mentorship

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|-------------------|--|
| 2025/10 – present | <b>Mehmet Imgı (Master's Student in Data Science, University of British Columbia)</b><br>Supervised frontend-backend integration for the pairwise lameness assessment application  |
| 2025/10 – present | <b>Rebecca Sokol-Snyder (Master's Student in Data Science, University of British Columbia)</b><br>Supervised research on evaluating political neutrality of output from Large Language Models  |
| 2025/10 – present | <b>Tanav Singh Bajaj (Master's Student in Data Science, University of British Columbia)</b><br>Supervised optimization of pairwise comparison algorithm to make smart selection of which cow to compare with whom for maximum information gain |
| 2025/9 – present  | <b>Xiaowen Su (Master's Student in Applied Animal Biology, University of British Columbia)</b><br>Supervised the development of a computer vision pipeline to automatically sort videos based on quality                                       |
| 2025/9 – present  | <b>Liangyan Zhou (Undergraduate Student in Applied Animal Biology, University of British Columbia)</b><br>Supervised the development of frontend design for a website enabling pairwise lameness comparison                                    |
| 2025/4 – 2025/6   | <b>Colombe Tolokin (Master's Student in Data Science, University of British Columbia)</b><br>Supervised the development of R package 'moo4feed', which is designed to extract individual animal traits from sensor data                        |
| 2025/4 – 2025/6   | <b>Nicole Lopez (Master's Student in Data Science, University of British Columbia)</b><br>Supervised the development of R package 'moo4feed', which is designed to extract individual animal traits from sensor data                           |
| 2024/9 – 2025/1   | <b>Victoria Portela Diniz Gaia (Master's Student in Animal Science, Universidade de São Paulo)</b><br>Co-supervised research on developing an R package for lying and standing behavior monitoring using HOBO sensors.                         |

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| 2024/1 – 2024/8  | <b>Mahshid Heydarirad (Undergraduate Student in Applied Animal Biology, University of British Columbia)</b><br>Supervised Mahshid in conducting a research project on cow welfare assessment using ChatGPT Vision. Mahshid assisted in sorting, labeling, and cleaning images for welfare assessment of dairy cows. I guided her through exploratory analysis and prompt engineering using OpenAI GPT-4o model.            |
| 2022/5 – present | <b>Kay Yang (Undergraduate Student in Biology, University of British Columbia)</b><br>Supervised research on feeding strategies of dairy cows. Project investigated how dynamic temporal and spatial competition influences feeding behaviors across 159 lactating Holstein cows over a 10-month period. Kay is currently pursuing veterinary medicine degree at University of Saskatchewan.                               |
| 2022/5 – 2023/12 | <b>Kratika Rathi (Undergraduate Honours Student in Statistics, University of British Columbia)</b><br>Guided Kratika in the development of a statistical model to analyze the repeatability and predictability of feeding behaviors in dairy cows.   |
| 2023/5 – 2023/8  | <b>Charlie He (Undergraduate Student in Computer Science, University of British Columbia)</b><br>Supervised a computer science project on fine-tuning YOLO-v8 model to automatically identify dairy cattle based on unique body patterns, achieving 98% accuracy on the test set. Charlie is currently pursuing a PhD at University of British Columbia.   |
| 2023/9 – 2023/12 | <b>Andrew Tran (Undergraduate Student in Computer Science, University of British Columbia)</b><br>Supervised a computer science project on automatic video quality classification using YOLO-v8 model. Andrew is currently working as a Software Engineer at Amazon.   |
| 2022/5 – 2023/8  | <b>Sora Jeong (Undergraduate Student in Cognitive Science, University of British Columbia)</b><br>Guided Sora in programming and running statistical analysis on pairwise lameness comparison results in R. Co-supervised her on a research project examining resource use and social dynamics in group-housed dairy cows. Research focuses on the interplay between individual traits, personality, and dominance status. |
| 2021/1 – 2021/5  | <b>Marriam Dia (Undergraduate Student in Applied Animal Biology, University of British Columbia)</b><br>Supervised research project validating R scripts for assessing lying and standing behaviors of dairy cows using HOBO sensors. Marriam is currently working as an International Concierge Agent.  |

- 2022/5 – 2022/7 **Jiwei Hu, Kristin Bunyan, Chaoran Wang, Allyson Stoll (Master of Data Science Students, University of British Columbia)**  
Collaborated with 4 students to develop a social network analysis dashboard for analyzing social bonds between dairy cows.
- 2021/7 – 2021/7 **Ify Anene, Steffen Pentelow, Selma Durić, Rafael Hellwig, Elanor Boyle-Stanley, Ela Bandari, Sasha Babicki (Master of Data Science Students, University of British Columbia)**  
Collaborated with 7 students in creating an interactive dashboard to visualize cattle behaviors in real-time.

## Professional Development

- 2024 **Future of Natural Language Processing (NLP) Workshop in the 38th Neural Information Processing Systems (NeurIPS) conference**  
Gained insights into cutting-edge generative AI models and methods to evaluate their outputs. I was invited to pitch my research insights about AI's representation bias of livestock farming at Google's GenMedia team social event.
- 2024 **PyOpenSci Fall Festival**  
Attended a 5-day workshop focusing on creating, testing and documenting Python packages.
- 2024 **The 39th Annual Association for the Advancements of Artificial Intelligence (AAAI) Conference**  
Participated in discussions on advancing generative AI research and applications, with a focus on AI ethics and animal welfare implications.
- 2023 **Conference on Computer Vision and Pattern Recognition (CVPR)**  
Attended the main CVPR conference, participated in the CV4Animals workshop, and engaged in discussions on the application of computer vision in livestock farming.
- 2022 **Product A/B Testing Certificate (Udemy)**  
Completed an online course on A/B testing and multi-armed bandit strategies for technological product development.
- 2021 **CIRTL Associate Certificate (Centre for the Integration of Research, Teaching, and Learning)**  
Earned a certificate by attending an instructional skills workshop aimed at enhancing teaching practices.

- 2021 **International Farm Animal Welfare Fellow Certificate**  
Recognized as a fellow for participating in the International Farm Animal Welfare Fellowship.
- 2019 **Accounting Fundamentals Certificate (Corporate Finance Institute)**  
Obtained a certificate on the basics of accounting, financial principles, and the future market.
- 2019 **Agriculture Future of America Technology Institute**  
Learned about precision agriculture and precision livestock farming, networked with industry professionals, and gained insights into the field.
- 2018 **Agriculture Future of America Leaders Conference**  
Networked with agriculture industry professionals and students, attended career workshops, and developed leadership and communication skills.

## Academic and Professional Service

- 2025 – present **Research Collaborator, UBC TrustML Research Cluster**  
Collaborate on research projects focusing on building reliable, secure, explainable, and ethical AI systems.
- 2024/11 –  
2025/5 **Reviewer, Methods in Ecology and Evolution**  
Reviewed one manuscript for this journal, focusing on innovative python script for dominance hierarchy calculation.
- 2024/1 **External Reviewer, Dutch Research Council (NWO)**  
Assessed one research funding application for the Dutch Research Council, with a focus on projects related to computer science and neuroscience.

## Leadership, Community and Volunteer Activities

- 2025/6 **Volunteer, ACM Conference on Fairness, Accountability, and Transparency (FAccT)**  
Volunteer to facilitate oral presentations at the 2025 ACM FAccT conference
- 2025/3 **Facilitator, AI for Animals conference**  
Facilitated one meetup and one workshop about Precision Livestock Farming during the 2025 AI for Animals conference.

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|------------------|--|
| 2022/8           | <b>Programming Instructor, Vancouver Independent School for Science and Technology</b><br>Taught students aged 10-13 how to program video games using PuzzleScript, provided troubleshooting support, and guided independent projects.   |
| 2021/12 – 2023/5 | <b>Organizer and Coordinator, UBC Animal Welfare Program 25th Anniversary Webinar Series Celebration</b><br>Planned a webinar series to celebrate UBC Animal Welfare Program's 25th Anniversary. Invited alumni to give presentations showcasing their impact on the animal welfare field.   |
| 2020/9 – 2021/12 | <b>Facilitator, Monthly Webinars at UBC Animal Welfare Program</b><br>Hosted monthly webinar series featuring international speakers, with around 30 participants per session.   |
| 2019/3 – 2020/3  | <b>Student Leader and Ambassador, Agriculture Future of America</b><br>Built a bridge for undergraduate students to connect with industry professionals through strategic networking, leadership development, and career-building initiatives. Represented Agriculture Future of America at various conferences (e.g., Alltech One 19) to negotiate funding and network with industry professionals. |
| 2017/12          | <b>Organizer and Speaker Introducer, TED x UW-Madison</b><br>Organized and hosted TEDx UW-Madison with club members, introduced speakers, and worked as an event photographer.   |
| 2013/8           | <b>Organizer, Chinese and American Charity Ball</b><br>Organized a charity ball for international students and locals in Yantai, Shandong, China. Donated all proceeds to a primary school in Laiyang, Shandong, and taught English to students during the visit.  |
| 2012/12 – 2013/6 | <b>Organizer, Second-Hand Book Charity Sales for Stray Dogs</b><br>Collected second-hand books and hosted charity fairs in Yantai, Shandong, China, donating all proceeds to a local animal shelter. Advocated for stray animal protection through media outreach and partnerships with Animals Asia Foundation.   |

## Professional Memberships

|                  |   |
|------------------|---|
| 2025/5 – present | <b>Graduate Student Member, Association for Computing Machinery (ACM)</b> |
|------------------|---|

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|-----------------|---|
| 2022/8 –        | <b>Graduate Student Member, European Federation of Animal Science (EAAP)</b>  |
| 2025/12         | <i>Attended annual conferences, presented research on dairy cow behavior and welfare.</i>   |
| 2024/2 – 2025/2 | <b>Graduate Student Member, Association for the Advancement of Artificial Intelligence (AAAI)</b>   |
|                 | <i>Explored cutting-edge AI research, participated in conference tutorials, and engaged in discussions about bias in AI, particularly concerning animals and livestock farming.</i> |
| 2019/1 –        | <b>Graduate Student Member, American Dairy Science Association (ADSA)</b>   |
| 2023/12         | <i>Presented research, attended annual meetings, and participated in student research competitions.</i>   |

## Technical Skills

### Programming Languages

Advanced: Python (e.g., pandas, numpy, scikit-learn, matplotlib), R (e.g., tidyverse, ggplot2), bash shell, SAS

Intermediate: HTML, Excel VBA

Coursework Experience: C++, Java, Julia

### Data Science, AI & Visualization Tools

Vibe Programming: Cursor

Version Control: Git, GitHub

Cloud & Containerization: Docker, AWS, Google Colab

Generative AI models: OpenAI API, Stability AI API

Visualization: Tableau, R Shiny, Matplotlib, Plotly

### Other Software

LATEX, Notion, 3DSMAX, GNU Make

### Languages

English (Fluent and Professional), Chinese (Native)