

Enrico Casella, PhD

ASSISTANT PROFESSOR OF DATA SCIENCE FOR ANIMAL SYSTEMS · INSTITUTE FOR COMPUTATIONAL AND DATA SCIENCES

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I am a multi-disciplinary computer scientist interested in applications of artificial intelligence and computer vision to complex systems. My main focus is in the agricultural domain, and more specifically animal science.

Professional Experience

- July 2024- **Assistant Professor of Data Science for Animal Systems**, Penn State University - Dept. of Animal Science
- 2023-2024 **Post-Doctoral Research Associate**, University of Wisconsin-Madison - PI: Dr. Joao Dorea
- 2019-2023 **Ph.D Computer Science - Research Assistant**, University of Kentucky - PI: Dr. Simone Silvestri
- 2018-2019 **Ph.D Computer Science - Teaching Assistant**, University of Kentucky
- 2017-2017 **Visiting Research Scholar**, Missouri University of S&T - PIs: Dr. S. Silvestri & Dr. S. K. Das & Dr. M. Ortolani

Education

University of Kentucky

PHD COMPUTER SCIENCE

- 4.0 GPA
- Advisor: Dr. Simone Silvestri
- Graduation: May 2023

Lexington, KY, USA

Fall 2018 - Present

University of Palermo

MS COMPUTER ENGINEERING

- 110/110 cum laude
- Master's thesis at Missouri University of Science & Technology

Palermo, Italy

2015 - 2018

University of Palermo

BS COMPUTER AND TELECOMMUNICATION ENGINEERING

- Computer Engineering Specialization

Palermo, Italy

2012 - 2015

Publications

PEER-REVIEWED JOURNAL ARTICLES

10. **E. Casella**, S. Silvestri, D. A. Baker, S. K. Das "A Human-Centered Power Conservation Framework based on Reverse Auction Theory and Machine Learning", in ACM Transactions on Cyber-Physical Systems.
9. H. Devaraj, S. Sohail, M. Ooi, B. Li, N. Hudson, M. Baughman, K. Chard, R. Chard, **E. Casella**, I. Foster, O. Rana "RuralAI in Tomato Farming: Integrated Sensor System, Distributed Computing, and Hierarchical Federated Learning for Crop Health Monitoring", in IEEE Sensors Letters.
8. **E. Casella**, M.C. Cantor, M. Woodrum, S. Silvestri, J. H. C. Costa "A Machine Learning and Optimization Framework for the Early Diagnosis of Bovine Respiratory Disease", in IEEE Access.
7. M. C. Cantor, **E. Casella**, S. Silvestri, D. L. Renaud, J. H. C. Costa, "Using Machine Learning and Behavioral Patterns Observed by Automated Feeders and Accelerometers for the Early Indication of Clinical Bovine Respiratory Disease Status in Preweaned Dairy Calves" in Frontiers in Animal Science, Vol. 3, 2022.
6. **E. Casella**, M. Ortolani, S. Silvestri, S. K. Das, "Hierarchical syntactic models for human activity recognition through mobility traces" in Springer Personal and Ubiquitous Computing, Vol. 24, Issue 4, pages 451-464, 2019.
5. **E. Casella**, A. R. Khamesi, S. Silvestri, "A framework for the recognition of horse gaits through wearable devices" in Elsevier Pervasive and Mobile Computing, Special Issue on Mobile and Social Sensing, Vol. 67, 2020.

CONFERENCE PROCEEDINGS

4. **E. Casella**, M. C. Cantor, S. Silvestri, D. L. Renaud, J. H. C. Costa, “Cost-aware Inference of Bovine Respiratory Disease in Calves using Precision Livestock Technology” in Proceedings of the IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), 2022. *Acceptance rate: 30.95% (13/42 accepted papers)*
3. **E. Casella**, A. R. Khamesi, S. Silvestri, D. A. Baker, S. K. Das, “HVAC Power Conservation through Reverse Auctions and Machine Learning” in Proceedings of the IEEE International Conference on Pervasive Computing and Communications (PerCom), 2022. *Acceptance rate: 10.11% (18/178 accepted full papers)*
2. **E. Casella**, A. R. Khamesi, S. Silvestri, “Smartwatch Application for Horse Gaits Activity Recognition” in Proceedings of the IEEE International Conference on Smart Computing (SMARTCOMP), 2019

WIP PAPERS

1. **E. Casella**, E. Sudduth, S. Silvestri, “Dissecting the Problem of Individual Home Power Consumption Prediction using Machine Learning” in Proceedings of the IEEE International Conference on Smart Computing (SMARTCOMP), 2022

ABSTRACTS

6. A. Negreiro, A. Alves, R. Ferreira, T. Bresolin, G. Menezes, **E. Casella**, G. J. M. Rosa, J. R. R. Dorea “Siamese Networks for identification of Holstein cattle during growth and across different physiological stages”, in Proceedings of the European Conference on Precision Livestock Farming (ECPLF), 2024.
5. **E. Casella**, J. R. R. Dorea “Evaluating a foundation model for animal body segmentation based on few-shot learning against a domain-specific deep neural network”, American Society of Animal Science (ASAS), 2024.
4. **E. Casella**, A. Vang, G. L. Menezes, G. J. M. Rosa, L. L. Hernandez, J. R. R. Dorea “Phenotyping mammary gland of dairy cows through histological image analysis”, American Dairy Science Association Annual Meeting (ADSA), 2024.
3. **E. Casella**, G. J. M. Rosa, J. R. R. Dorea “Exploring symbolic regression for bodyweight prediction in dairy calves”, American Dairy Science Association Annual Meeting (ADSA), 2024.
2. **E. Casella**, M. C. Cantor, J. H. C. Costa, M. Woodrum, S. Silvestri “Using Machine Learning Techniques to Classify Respiratory Disease Persistency in Dairy Calves”, American Dairy Science Association Annual Meeting (ADSA), 2023.
1. M. Cantor, **E. Casella**, S. Silvestri, D. Renaud, J. H. C. Costa, “Using machine learning and precision livestock farming technology for early indication of health status in preweaned dairy calves” in Proceedings of the European Conference on Precision Livestock Farming (ECPLF), 2022.

Awards, Fellowships, & Grants

- 2023 **CPS Rising Star**, University of Virginia
- 2023 **Outstanding Graduate Student Award**, Computer Science Department at U. of Kentucky
- 2023 **Best Paper Award**, Computer Science Department at University of Kentucky
- Best Poster Award**, Computational Commonwealth Summit by University of Kentucky’s Center for Computational Science (CCS)
- 2022 **Initiative Award**, Graduate Student Association of Computer Science at U. of Kentucky
- 2022 **Thaddeus B. Curtz Memorial Scholarship**, University of Kentucky
- Best Poster Award**, Computational Commonwealth Summit by University of Kentucky’s Center for Computational Science (CCS)
- 2020

Teaching Experience

Fall 2022	CS 686 , Guest Lectures on Linear Programming	<i>U. of Kentucky</i>
Spring 2019	CS 371 , Guest Lectures on Machine Learning Principles	<i>U. of Kentucky</i>
Spring 2019	CS 371 , Teaching Assistant	<i>U. of Kentucky</i>
Fall 2018	CS 215 , Teaching Assistant	<i>U. of Kentucky</i>

Mentoring

2023-	Enzo Machado Mangolini , Undergraduate Student	<i>UW Madison</i>
2022-	Alexander Barrera , Ph.D. Student	<i>U. of Kentucky</i>
2022-	Tao Xu , Ph.D. Student	<i>U. of Kentucky</i>
2022-	Butcher Jackson , Undergraduate Student	<i>U. of Kentucky</i>
2021-2022	Sudduth Eleanor , Undergraduate Student	<i>U. of Kentucky</i>
2021	Hoang Duong H. , Undergraduate Student	<i>U. of Kentucky</i>

Outreach & Professional Development

TECHNICAL PROGRAM COMMITTEE MEMBER

IEEE MASS Workshop on Distributed Systems for the Agriculture Revolution (DSys4AR 2023)
ACM 24th International Conference On Distributed Computing And Networking (ICDCN 2022, 2023)
IARIA 10th International Conference on Advanced Communications and Computation (INFOCOMP 2020)

JOURNAL PEER REVIEW

IEEE Transactions on Mobile Computing
IEEE Access
IEEE Internet of Things
IEEE Human-Machine Systems
Elsevier Pervasive and Mobile Computing
Elsevier Computers in Biology and Medicine
Elsevier Ad-hoc Networks
Elsevier Computer Networks
Elsevier Sustainable Energy, Grids and Networks
Springer Reliable Intelligent Environments
Journal of Aerospace Information Systems
MDPI Animals

CONFERENCE PROCEEDINGS PEER REVIEW

IEEE International Conference on Distributed Computing Systems (ICDCS)
IEEE Global Communications Conference (GLOBECOM)
IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS)
IEEE International Conference on Distributed Computing in Smart Systems and the Internet of Things (DCOSS)
IEEE International Conference on Sensing, Communication, and Networking (SECON)
IEEE International Conference on Communications (ICC)
IEEE International Conference on COMMunication Systems & NETworkS (COMSNETS)
IEEE International Conference on Smart Computing (SMARTCOMP)
IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (LCN)
IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)
IEEE International Workshop on Smart Service Systems (SmartSys)
IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)
IEEE/ACM International Symposium on Quality of Service (IWQoS)

PROFESSIONAL MEMBERSHIPS

Institute of Electrical and Electronics Engineers (IEEE)

OUTREACH

Nov 2022	2022 ICNP , Student Volunteer	<i>Lexington, KY</i>
2022-	Graduate Student Association of Computer Science (GSACS) , President	<i>U. of Kentucky</i>
2021-2022	Graduate Student Congress , Mental Health Committee Member	<i>U. of Kentucky</i>
2021-2022	Graduate Student Association of Computer Science (GSACS) , Representative	<i>U. of Kentucky</i>