

Ryan Jeon, Ph.D. Candidate

Computer Vision
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Programming Skills

C++, Python (Pandas, OpenCV, Pytorch, matplotlib, scikit-learn, Tensorflow, nltk, etc), R, UNIX commands, Blender, Unity, Microsoft Office, MeshLab. Git, AWS, Jupyter Notebook.

Experience

- **Estimation of Body Weight using 3D Point Clouds** Iowa State University
Graduate Research Assistant *June 2021 - Present*
 - **Pose Estimation:** Complete pigs were extrapolated from reconstructed meshes derived from partial point clouds using screened Poisson surface reconstruction.
 - **Weight Estimation:** Extracted biometrics off complete pigs (girth, height, length, width, flank) and were regressed in a machine learning model to predict live body weight (RMSE = 6.5 lb).
- **Object Detection and Image Segmentation using CNNs** Iowa State University
Graduate Research Assistant *June 2020 - Present*
 - **Detection of Key Landmarks:** Detected key body landmarks in a limited image dataset of swine using YOLO (mAP = 0.94) and Mask R-CNN (mAP = 0.93).
 - **Feature Extraction:** Biologically significant biometrics such as height, knee and elbow angles, and body surface area were used to determine body condition.
- **NASA: Recycling Inedible Plant Biomass** National Aeronautics and Space Administration
X-Habilitation Project: Team Leader *April 2016 - May 2017*
 - **Signal Processing:** Spearheaded execution of a data acquisition system to model temperature time series data using C++.

Publications

- Effect of a Genetic Marker for the GBP5 Gene on Resilience to a Polymicrobial Natural Disease Challenge in Pigs: <https://doi.org/10.1016/j.livsci.2021.104399>
- An Introduction to Automated Visual Sensemaking for Animal Production Systems: <https://elibrary.asabe.org/abstract.asp?aid=52179>
- Proliferation of Peripheral Blood Mononuclear Cells From Healthy Piglets After Mitogen Stimulation as Indicators of Disease Resilience: <https://doi.org/10.1093/jas/skab084>
- LivestockCVv1: Computer Vision software for Livestock Animal Feature Detection: In Progress
- Deep Learning based Landmark Detection in Pigs: In Progress
- Live weight estimation for pigs based on side surface point clouds.: In Progress

Education

- **Doctor of Philosophy (Ph.D.) in Agricultural Engineering** June 2020 – December 2022
Iowa State University *Ames, IA*
- **Masters (M.S.) in Statistical Genetics and Genomics** August 2018 – June 2020
Iowa State University *Ames, IA*
- **Bachelor of Science (B.S.) in Bioengineering** August 2012 – June 2018
The Ohio State University *Columbus, OH*