

ZHOU (JOE) TANG

CONTACT

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<https://github.com/Mrwow/>

SKILLS

Python-base AI/Machine learning model and GUI software development

R, SQL, JavaScript, Git

Problem-solving

EDUCATION

Washington State University,
Pullman, WA, USA

2019-2023 (expected)

Ph.D. in Crop Science

Huazhong Agriculture
University, China

2013-2016

M.S. in Animal Genetics and
Breeding

Huazhong Agriculture
University, China

2009-2013

B.S. in Animal Science

PROFILE

I have a multidisciplinary background from software engineer, machine learning, genetics and phenomics in plant and animal science. The developed software packages are targeted to reduce the barriers of applying artificial intelligent in agriculture.

WORKING EXPERIENCE

USDA-ARS AI-COE/SCINet Graduate Student Internship

06/2023 to 08/2023, USDA-NIFA/NSF AISF

Classification of alfalfa root system architecture using confident learning and convolutional neural network. Image-based Alfalfa flower and stem detection with YOLO.

Crop Physiology Intern

05/2022 to 08/2022, US Bayer Crop Science, Jerseyville, IL

Explore and verify high-throughput and non-destructive image system to assess soil condition and crop physiology metrics in experiment field.

Graduate Research Assistant

01/2019 to 12/2022, Washington State University, WA, USA

Developed two software for boosting label efficiency and deploying model of image classification and object detection in agriculture. Developed three pipelines for image-based phenotyping in wheat stripe rust detection and assessment, and biomass prediction in the Alfalfa.

Graduate Teaching Assistant

01/2021 to 05/2021, Washington State University, WA, USA

Graduate Teaching Assistant for Statistical Genomics

Database Engineer

08/2017 to 09/2018, Hubei Jinpeng Information System Ltd, China

Managed a local Hadoop platform compiled with the CLOULDERA. Developed pipelines (python, SQL and Kafka) for the ETL (Extract, Transform, Load) of database.

Bioinformatics Engineer

06/2016 to 07/2017, MetWare Biotechnology Ltd, China

Apply genome-wide association analysis with metabolomic data (from mass spectrometer), transcriptome data (RNA-seq), and genome sequencing data to identify candidate genes related to secondary metabolite and related regulatory genes.

SOFTWARE DEVELOPED

1. Ladder: A software to label images, detect objects and deploy models recurrently for object detection (<https://github.com/Mrwow/Ladder/>)
2. Rooster: A python software for image labeler and classifier through interactive recurrent annotation (<https://github.com/Mrwow/Rooster>)
3. RustNet: A neural network model for wheat stripe rust detection in UAV/smartphone images and videos (<https://zzlab.net/RustNet/>)
4. Drone-based multispectral image analysis pipeline: A biomass prediction pipeline for alfalfa ([https://github.com/Mrwow/Alfalfa biomass prediction](https://github.com/Mrwow/Alfalfa_biomass_prediction))

ORAL AND POSTER PRESENTATION

1. USDA-ARS SCINet/AI-COE Graduate Student Internship Symposium (Aug 2023), Classification of alfalfa root system architecture using confident learning and convolutional neural network
2. WSU Plant Sciences Retreat (Mar 2022), Affordable High Throughput Field Detections of Wheat Stripe Rust Using Deep Learning with Semi-Automatic Image Labeling.
3. Plant and Animal Genome XXVIII (Jan 2020), Majority of Biomass Variation Explained by Drone Images One Day Before Harvesting.

SELECTED PUBLICATIONS

First / Co-first Authorship

1. **Tang, Z.**, Wang, M., Schirrmann, M. et al. (2023) Affordable High Throughput Field Detection of Wheat Stripe Rust Using Deep Learning with Semi-Automated Image Labeling. [Computers and Electronics in Agriculture, Volume 207.](#)
2. **Tang, Z.**, Hu, Y., and Zhang, Z. (2023) ROOSTER: An image labeler and classifier through interactive recurrent annotation. [F1000Research 2023, 12:137.](#)
3. **Tang, Z.**, Parajuli, A., Chen, C.J. et al. (2021) Validation of UAV-based alfalfa biomass predictability using photogrammetry with fully automatic plot segmentation. [Scientific Reports 11, 3336.](#)

Co-Authorship

1. Liu, G., Jiang, X., He, C., **Tang, Z.** (2013) Neurexophilin 1 gene polymorphisms of chicken and its variation among species. [BIOCHEMICAL GENETICS, 51\(7-8\):618-25.](#)

Preprint

1. **Tang, Z.**, and Zhang, Z. (2023). Ladder: A software to label images, detect objects and deploy models recurrently for object detection, [arXiv:2306.10372.](#)
2. Tovar, J. C., **Tang, Z.**, Kinser, J. D., & Morgan, P. B. (2022). Detecting soil compaction with a ground penetrating radar. [Authorea October 17, 2022.](#)