

IMPACT

PRESIDENT'S REMARK

Dear AOC members, colleagues, and friends,

Hope everything finds you well!

In the past few months, the AOC Executive Board has been meeting regularly discussing the nomination call for 2024 AOC student and professional awards, student career planning and writing training, and member development and services. AOC board members and SAC team made a lot of efforts to serve our community:

- 1) Organized a scientific paper writing webinar (March 22): The invited speaker was Dr. Manoj Karkee, Professor and Director of Center for Precision and Automated Agricultural Systems, Biological Systems Engineering at Washington State University.
- 2) Held a job interview seminar (May 12): Three faculty members were invited to share their experience and knowledge in career planning and job hunting.

Presenter 1: Dr. Hao Gan, Assistant Professor in the Department of Biosystems Engineering and Soil Science, University of Tennessee;

Presenter 2: Dr. Jing Zhou, Assistant Professor in the Department of Crop and Soil Science, Oregon State University;

Presenter 3: Dr. Chang Chen, Assistant Professor in the Department of Food Science, Cornell University.

- 3) Published another issue of IMPACT Newsletter updating the career development and research of AOC members and new job openings.

In the following two months, we will work closely with all of you on the preparation of 2024 AOC business meeting, AOC student and professional awards, and China Exchange Forum, etc., that are going to happen during the 2024 ASABE International Meeting (July 28-31, 2024; Anaheim, California, USA). Please remember to select AOCABFE Business Meeting and Award Celebration when you are registering for the ASABE meeting if you plan to attend our annual banquet. We look forward to seeing you all in Anaheim, California!

Best wishes,

Lilong Chai

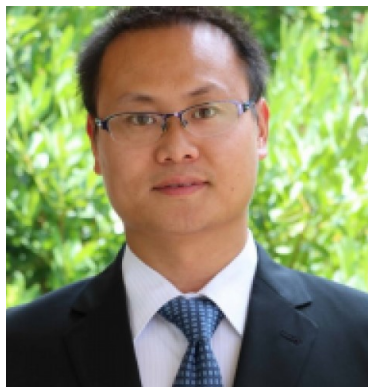
AOC President (2023-2024)



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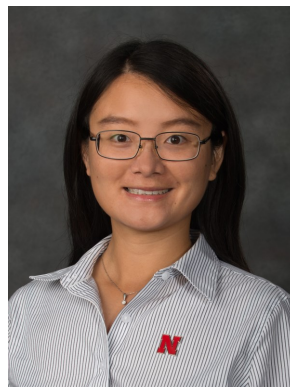
AOC 2023-2024 Executive Board



CHAI, LILONG
University of Georgia
PRESIDENT



WU, SARAH (XIAO)
University of Idaho
PAST-PRESIDENT



YEYIN, SHI
University of Nebraska-
Lincoln
PRESIDENT-ELECT



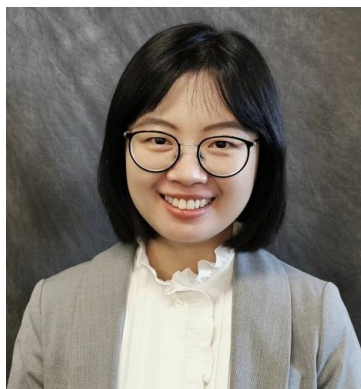
BAO, YIN
Auburn University
VICE-PRESIDENT



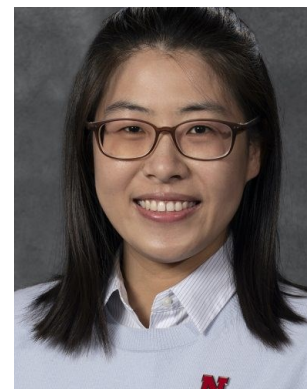
WANG, YINGKUAN
Chinese Academy of
Agricultural Engineer-
ing
EDITOR IN CHIEF - IJABE



JIANG, YU
Cornell University,
MEMBER-AT-LARGE



XIANG, LIRONG
North Carolina State Uni-
versity
MEMBER-AT-LARGE /
NEWSLETTER EDITOR



XIONG, YIJIE
University of Nebraska-
Lincoln
MEMBER-AT-LARGE

AOC 2023-2024 Executive Board



WANG, XU
University of Florida
MEMBER-AT-LARGE



LI, GUOMING
University of Georgia
SECRETARY



CHEN, CHANG
Cornell University
MEMBER-AT-LARGE



LI, ZHENGKUN
University of Florida
SAC CHAIR

2024 AOC Board Meeting Minutes

12:00-1:00 pm EDT, April 08, 2024

Attendants: Lilong Chai, Yeyin Shi, Guoming Li, Chang Chen, Yin Bao, Yu Jiang, Lirong Xiang, Yijie Xiong

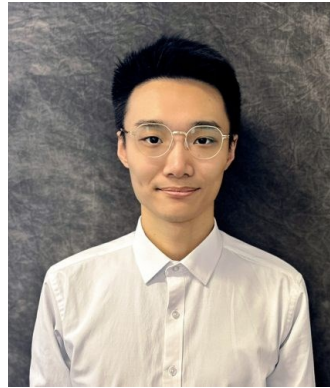
Absent: Sarah Wu, Zhengkun Li

1. Student award: Lirong Xiang – leadership and scholarly achievement awards, Yin Bao – paper award, Chang Chen – presentation award.
2. Faculty award: Lilong will negotiate with Sarah for the faculty award evaluation.
3. The award announcement should be released before May, so that students and faculties can have enough time to prepare relevant materials.
4. Global engagement (Yeyin): The China exchange is broadened by including scientists from other countries, such as African and India. Tentative title is ‘Harvesting Innovation Globally: Engineering Solutions for Agricultural Challenges’. The seminar highlights the interaction with audients.
5. Invited panelists: Dr. Zhongli Pan (renewable), Dr. David Jones (circular bioeconomy). If Drs. Lingying Zhao and Lingjuan Wang-Li are invited, the title should be changed more broadly as both scholars conducted the research related to primary production.
6. AOC exchange: Maintaining the key term ‘AOC’ to keep the customs and advantages of the community. Other key words like global should be included to enlarge the sustainability of the community, like China-Africa, China-India. Detailed agenda should be determined, such as start/end time and duration.
7. Change the bylaw of the executive board members or presidents: Negotiating with senior faculties regarding the changes of bylaw; bylaw changes should be released in advance, so that other members can have some time to consider.
8. Membership (Yu Jiang and Chang Chen): Institutional membership was established when Dr. Changying Li was the AOC president. Three points for discussion: 1) institutional membership fees. The amount is not matter, but the role should be established, so that the AOC institutional membership can be taken seriously; 2) student benefits. Enhancing the competence and academic training for AOC students, so that the students can be more competitive in the job market; 3) future vision. Given the situations for Chinese faculties and students, a serious discussion should be conducted to discuss the future of AOC. Yu Jiang and Chang Chen will summarize the sponsor
9. Institutional membership discussion: Industry involvement (sponsor). Membership: ~\$4,500, regular fixed cost: ~\$2,000, and banquet: ~\$4,000.
10. Newsletter (Lirong): Lirong will create another issue summarizing the award information.
11. Restaurant: Yin Bao found a place for the banquet (王朝大酒店: <https://www.goldenseaweddingvenue.com/restaurant-and-event-venue-make-a-reservation>). Chang Chen will confirm with this.

SAC 2023-2024 Executive Board



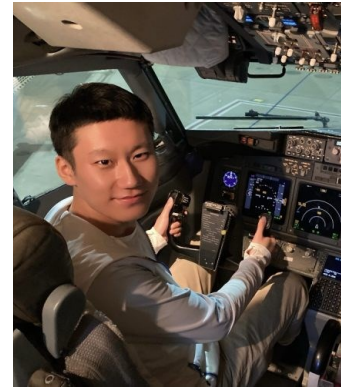
LI, ZHENGKUN
University of Florida
SAC CHAIR



LIU, XUAN
Iowa State University
SAC VICE CHAIR



ZHANG, JUNXIAO
University of Nebraska-
Lincoln
SECRETARY



LIU, WENHAO
University of Florida
SAC MEMBER-AT-
LARGE



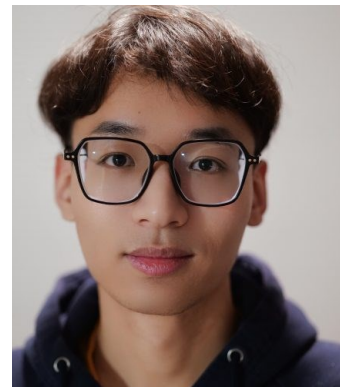
DUAN, JAMIE
University of Nebraska-
Lincoln
SAC MEMBER-AT-
LARGE



XIAO, YITING
University of Arkansas
SAC MEMBER-AT-
LARGE



**XIANG,
ZHAOCHENG**
University of Nebraska-
Lincoln
SAC MEMBER-AT-
LARGE

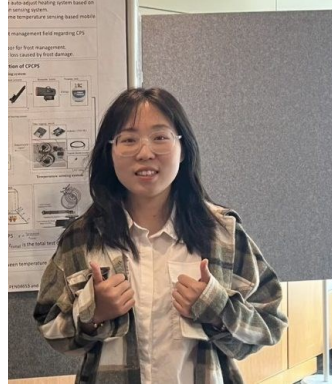


HE, WEILONG
North Carolina State
University
SAC MEMBER-AT-
LARGE

SAC 2023-2024 Executive Board



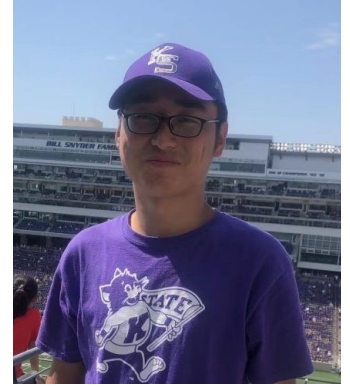
TIAN, FENGKAI
University of Missouri
SAC MEMBER-AT-
LARGE



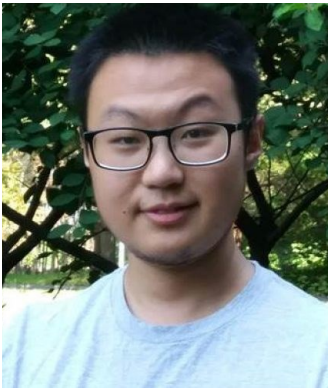
HUA, WEIYUN
Penn State University
SAC MEMBER-AT-
LARGE



ZHOU, XU
Washington State Uni-
versity
SAC MEMBER-AT-
LARGE



HAN, MINGQIANG
Kansas State University
SAC MEMBER-AT-
LARGE



LIU, ERTAI
Cornell University
SAC MEMBER-AT-
LARGE

2024 AOC AWARDS

Dear AOC members, students, and friends,

It is time to nominate and encourage our colleagues and students who have made outstanding achievements in their professional career and service to AOC for our prestigious AOC awards. Please find details of each award below:

STUDENT AWARDS

AOC Graduate Academic Achievement Award:

The AOC Graduate Scholarly Achievement Award recognizes AOC student members who made outstanding scholarly achievements. Students who have not graduated or are within a year of official graduation are eligible for this award. If you would like to be considered for the AOC Graduate Scholarly Achievement Award, please ask your major professor to nominate you. Check with AOC for the nomination procedure and criteria. The nomination should be sent to Dr. Lirong Xiang (lxiang3@ncsu.edu) no later than **June 20, 2024**. Note that your major professor does not have to be an AOC member, neither does he/she have to be a Chinese. You may submit an entry to the competition or be nominated for an award even if you do not plan to attend the 2024 ASABE AIM.

Candidates' qualifications will be evaluated based on their performance on in-class, research, and outreach activities. The following criteria shall be used to evaluate the candidates:

- Academic performance (current year and the trend over the past years)
- Scholarly activities, including
- Publications (journal articles, fact sheets, software, web pages, etc.)
- Presentations (oral, poster, mass media, etc.)
- Grant proposals
- Invention disclosures
- Participation in professional activities (conferences, professional societies)
- Other scholarly activities

AOC Graduate Leadership and Service Award:

The AOC Graduate Leadership and Service Award recognizes an AOC student member who has excelled and demonstrated leadership on the activities of AOC. The winners will receive certificates and cash awards (\$150 each). The deadline for 2024 nomination is **June 20, 2024**. Of course, you must be an AOC student member to become eligible for these awards. You may submit an entry to the competition or be nominated for an award even if you do not plan to attend the 2024 ASABE AIM. The nomination should be sent to Dr. Lirong Xiang (lxiang3@ncsu.edu) no later than **June 20, 2024**, with the title in the email. This award shall be nominated by an AOC member with a nomination letter describing the candidate's leadership and service contributions to AOC and the profession. In addition, the candidate shall prepare a one-page essay on "how can we improve graduate student involvement in advancing the goals of AOC" and a list of three references with detailed contact information.

Candidates' qualifications will be evaluated based on their contributions to advancing the goals of AOC and the profession. The following criteria shall be used to evaluate the candidates:

- Recruitment and promotion for AOC and its programs
- Showing hospitality to and mentoring new AOC student members
- Organizing and making contributions to AOC activities
- Participating in AOC activities
- Providing leadership and service to other professional societies
- Providing leadership and service at the home institution
- International activities.

2024 AOC AWARDS

AOC Student Paper Competition Award:

The AOC student paper competition recognizes the AOC student members who show excellence in the conduct and presentation of research. If you already submitted a paper to the ASABE Annual International Meeting (AIM) and are interested in participating in the AOC student paper competition, please send your paper and the “entry form” to Dr. Yin Bao (yinbao@udel.edu) no later than **June 20, 2024**. You can find the judging criteria (score sheet) that will be used to evaluate your papers from the same website. Up to five winners (depending on the total number of entries) will receive certificates as well as cash awards of \$200, \$150, \$100, \$50, \$50. Please note that we only accept papers written for the 2024 ASABE AIM. Therefore, your paper must have a number assigned by ASABE.

Student Research Presentation Award:

This is an invitation to submit oral presentation to 2024 AOC Student Research Presentation Competition Program. The First, Second, and Third place will receive \$200, \$150, and \$100 cash award, respectively, and will be recognized at the AOC banquet. The number of awardees (two or three) will depend on the total number of entries. AOC hopes that awardees can benefit from the award for their professional development. Send all documents including entry form and shared links for presentation videos (Dropbox etc.) in one single pdf file to Dr. Chang Chen (cc2774@cornell.edu) by **June 20, 2024**. All documents should be written or presented in English.

To be eligible for this program:

Each entry for the competition will be limited to one paper (ASABE conference paper for 2024 annual international meeting) per student, and the first author must be an AOC student member.

Each entry is required to include a submitted “Entry Form” signed by a faculty member stating that he/she has approved the presentation.

FACULTY AWARDS

AOC Fellow

AOC Fellow is the highest honor conferred for exceptional achievement by an AOC member. The Nomination Form and letters of support are to be converted into PDF files and submitted to AOCABFE executive board through email to the attention of Dr. Sarah Wu – xwu@uidaho.edu. Please use “AOCABFE Fellow” as subject of the email. The support letters may be sent with the Nomination Form or may be sent separately. The deadline for submitting Nomination Forms and letters of support is **June 15, 2024**. Details on nomination procedure can be found here. <http://aocabfe.com/fellow-nomination/>

AOC Faculty Awards

In addition, AOC currently has three-member awards (Distinguished Career Award, Early Career Award, and Outstanding Service Award). Nominations for the AOC member awards should be submitted to Dr. Sarah Wu – xwu@uidaho.edu by **June 15, 2024**

Details on nomination procedure can be found from the link below. <http://aocabfe.com/nomination/>

Yours sincerely

SAC student activities

AOC seminar: Writing Convincing Research Manuscripts

撰写令人信服的研究文章手稿

2024年3月22日美东时间8点晚的线上讲座演讲人为Manoj Karkee教授，演讲主题为：Writing convincing research manuscripts。Karkee博士是华盛顿州立大学（WSU）精密与自动化农业系统中心（CPAAS）和生物系统工程系的教授兼主任。他在爱荷华州立大学获得农业工程和人机交互博士学位。Karkee博士在WSU CPAAS领导着一支强大的研究团队，专注于感知、机器视觉和农业机器人技术。他在‘Computers and Electronics in Agriculture’，‘Computers in Industry’，‘Journal of Field Robotics’，and ‘Journal of the American Society of Agricultural and Biological Engineers (ASABE)’发表多篇文章，并受邀在许多国内外会议和大学做演讲。Karkee博士担任‘Computers and Electronics in Agriculture’的主编，‘Journal of the ASABE’副编，‘Journal of Field Robotics’的客座编辑，以及CIGR (International Commission of Agricultural and Biosystems Engineering) Section III - Plant Production和IFAC (International Federation of Automatic Control) Technical Committee 8.1 - Control in Agriculture的主席。Karkee博士荣获了ASABE颁发的“2020年度最佳工程概念奖”，并被《Connected World》杂志评为“2019年人工智能和物联网的先驱”。



Prof. Manoj Karkee

在这次演讲中，Karkee博士分享了学术写作的主要组成部分，并探讨了写作的关键方面，包括工作的新颖性、目标的清晰度以及方法论中所需的详细程度。他强调在论文发表之前，它们会经过专家同行的严格审查，以确保研究的严谨性、结果的准确性和完整性，以及发现的重要性。因此，撰写有效且具有说服力的论文以促进和加速整个过程至关重要。此外，Karkee博士还讨论了一些常见但可避免的写文章和提交中的错误，例如语言、结构、格式以及目标期刊的范围。最后，Karkee博士具体分析了若干个在同行评审的过程中如何回应审稿人的意见和建议案例。

Video record link: <https://wsu.zoom.us/rec/share/jBAh9Lj62Zl1bh1iMvblyWn4Y7obGdpLsct-fy3uX6GbG1SxvYSM6rm9KBvKZpmRgd.il5WDyJ1GWtBpWwP>

SAC student activities

AOC seminar: Experiences and Tips for Academic Job Interviews

教职工作面试经验分享

AOC 2024春季研讨会荣幸地邀请到了三位助理教授，为AOC师生分享他们在教职工作面试过程中的宝贵经验。此次会议于美国东部时间5月12日晚6:30至8:00通过线上形式顺利举行，历时一小时30分钟，吸引了超过20名AOC成员全程在线参与。

报告人介绍

Dr. Hao Gan

田纳西大学生物系统工程与土壤科学系助理教授。

Dr. Jing Zhou

俄勒冈州立大学作物与土壤科学系助理教授。

Dr. Chang Chen

康奈尔大学食品科学系助理教授。



Dr. Hao Gan



Dr. Jing Zhou



Dr. Chang Chen

研讨会内容

此次研讨会讨论了如何有效准备教职工作的面试，会议涵盖以下三个方面：

SAC student activities

AOC seminar: Experiences and Tips for Academic Job Interviews

教职工作面试经验分享

（一）准备申请材料、Zoom面试和现场面试

Hao Gan、Jing Zhou和Chang Chen分别分享了他们的职业发展历程，包括博士、博后及新教职，以及在求职过程中材料准备和面试过程，最后还有个人学术能力积累的经验。

（二）小组讨论

随后，我们进行了小组讨论，围绕一些常见的问题进行了深入探讨。三位博士聊了成功研究生和博士后教育所需的关键因素、职业生涯中的重要决策、找工作过程中的挑战及未来的发展方向等话题。

（三）观众提问

最后，我们进行了10分钟的观众提问环节，观众就自己感兴趣的问题与三位教授进行了交流。

此次研讨会不仅促进了与会者对三位年轻教授职业历程与求职经验的了解，也为年轻学者提供了一次与新晋教职近距离交流的难得机会。对于未能参与现场的朋友，我们也贴心提供了研讨会的录播链接：

https://psu.mediaspace.kaltura.com/media/1_sugijh5o

2024 中国农业展望大会在京召开

2024年4月20日，2024中国农业展望大会在北京召开，主题为“加强全产业链监测预警 发展农业新质生产力”。中国农业科学院党组书记杨振海及多位嘉宾在开幕式上致辞。会议强调农业展望的重要性，需加强监测预警技术创新，为“三农”政策提供科学参考。本届大会发布了《中国农业展望报告（2024—2033）》，预测未来10年粮食等20种主要农产品的生产、消费、贸易和价格信息。报告显示，未来农产品生产能力和市场竞争力将显著提升。



大会期间，与会专家围绕农业新质生产力、粮食安全、绿色消费、全产业链监测预警等热点问题进行专题研讨。中国农业大学原校长柯炳生、中国工程院院士赵春江、美国农业部首席经济学家塞斯·迈尔等作主题报告。中央财办、国家发展改革委、农业农村部、商务部、国家统计局、中国气象局等部门领导及国际代表出席会议。农业农村部市场预警专家委员会指导会议，中国农科院农业信息研究所主办。此次大会指出，要提升农产品全产业链监测预警能力，锚定农业强国战略目标，发挥农业展望在决策中的参考作用。报告显示，未来10年粮食等重要农产品综合生产能力将显著增强，农产品供给质量与市场竞争力将明显提升，消费结构不断优化，贸易保持增长趋势。大会为农业新质生产力发展和农业农村现代化建设提供了重要支持。

2023耒耜国际会议在江苏大学顺利举办

2024年4月27日至29日，2024耒耜国际会议在江苏大学召开。会议由中国农业机械学会等主办，吸引了280余位国内外专家、学者和企业负责人，围绕智能农机和智慧农业创新发展展开深入讨论。江苏大学党委书记李洪波在欢迎辞中强调，本次会议对推动农业新质生产力和乡村振兴具有重要作用，江苏大学将努力建设高素质创新型现代农业装备人才基地。江苏省政协副主席洪慧民指出，耒耜国际会议已成为农业装备领域的重要交流平台，对江苏农业领域新质生产力的发展具有重要意义。



开幕式上，多项合作协议签署，包括智能农机装备产教融合基地、科技创新智库基地等。此外，还为“农业机器人操作系统”等4个联合实验室揭牌，进一步推动农业智能化发展。会议期间还发布了《中国乡村数字经济发展报告》，并举行了天津智能农业研究院与天津理工大学的战略合作签约仪式。

会议期间还举办了混合动力农机产品技术交流与产业推进会、零部件分会会长（扩大）会议、涉农高校工学院书记院长圆桌会议等多场相关活动。多位专家学者围绕农田残膜污染治理、农业科技创新、农业装备技术、数字化视角下农机装备发展等主题作了主旨报告。会议还设立了智慧农业技术成果展区，展示了40余项技术产品，旨在搭建国际化的交流平台，促进全球智慧农业的发展。赵春江院士还向全国科技工作者致以节日祝福，并鼓励青年科技工作者坚定理想信念，为农业强国建设作出贡献。

“天鹅杯”第九届国际大学生智能农业装备创新大赛决赛在石河子大学举办

2024年5月12日，第九届“天鹅杯”国际大学生智能农业装备创新大赛决赛在石河子大学举行。本次大赛由国际农业和生物系统工程委员会、中国农业机械学会等主办，石河子大学承办，共有151所高校提交了1201件作品，经过初赛和复赛，453件作品进入决赛。参赛作品涵盖智能农业装备发明、棉花变量播种机器人竞技、农业装备行业企业出题、未来智能农机和智慧农业概念设计四个类别，展示了现代农业装备的创新成果。



石河子大学党委书记徐善东、中国工程院院士陈学庚等嘉宾在开幕式上致辞，强调了本次大赛在推动现代农业装备人才培养和科技创新方面的重要作用。中国工程院院士罗锡文和赵春江以及国际农业与生物系统工程学会（CIGR）秘书长Fedro S. Zazueta通过视频向大会表示祝贺，希望加强高校、院所和企业间的合作，促进农业现代化发展。

经过专家评审和现场竞技等环节，大赛共评选出特等奖35项，一等奖80项，二等奖156项，优秀奖125项，10所学校获得“优胜杯”，并成功与企业签约了两项创新成果转化协议。第十届国际大学生智能农业装备创新大赛将由青岛农业大学承办。本次大赛以“创新赋能农装、智能引领未来”为主题，为智能农业装备领域的发展注入了新的活力。

国际农业机械及智慧农业创新发展对接会在长沙召开

6月1日，第十三届中国中部投资贸易博览会专题活动——国际农业机械及智慧农业创新发展对接会在长沙举办。此次会议由湖南省农业农村厅主办，湖南省农机事务中心与博罗那展览有限公司联合承办。会议旨在推动国际农业技术交流与合作，提升“湘味农机”的国际影响力。



会议邀请了多国专家和企业代表，就全球农业机械和智慧农业的发展趋势进行深入探讨。意大利专家皮斯科皮略和博洛捏西详细分析了农业机械的全球需求变化和技术趋势。华南农业大学胡炼研究员介绍了无人化智慧农场的关键技术。多家企业，包括中联农业机械股份有限公司和湖南农夫机电有限公司，展示了各自的最新技术和市场布局。会议期间，还举行了湖南农机进入意大利博洛尼亚国际农机展的合作签约仪式，标志着湖南农机走向国际舞台。

智慧农业成为此次对接会的高频词汇，专家一致认为智慧农业和无人农场是未来农业发展的主要趋势。湖南在智慧农机和无人农场领域已进行了一些探索。长沙桑铎特农业机械设备有限公司介绍了其在丘陵山区农机装备方面的创新成果，并计划投入1000万元用于新建现代丘陵农业机械工程中心实验室。这些努力将进一步推动智慧农业技术的创新与应用，为农业现代化发展注入新的动力。

第四届中美农业圆桌论坛在济南举行

2024年6月7日，第四届中美农业圆桌论坛在山东济南举行，主题为“粮食安全与农业合作”。中国人民对外友好协会会长杨万明在致辞中表示，期望通过本次论坛进一步深化两国在农业、教育、人文等领域的合作，加强交流，推动中美关系的稳定发展。论坛由中国人民对外友好协会与美国腹地中国协会联合创办，旨在拓宽中美农业合作渠道，增进相互了解。



美国驻华大使尼古拉斯·伯恩斯通过视频致辞，强调农业在中美关系中的重要性，表示美国愿意在农业、气候变化、粮食安全等领域与中国持续合作。美国腹地中国协会副主席董云裳指出，美中合作对全球性挑战如粮食安全和气候变化至关重要，呼吁两国采取集体行动，通过持续对话和合作应对这些紧迫问题，建立稳固的农业合作关系。

中粮集团总经理栾日成表示，将继续深化与美国企业的合作，加强贸易往来和技术交流，推动全球农粮产业链的融合，提升全球粮食安全水平。中美农业圆桌论坛自2021年创办以来，已成功举办三届，今年是首次在中国举办。该论坛为中美农业合作搭建了重要平台，推动了两国在农业领域的交流与合作，有助于全球农业和粮食安全的提升。

泰国第一届国际农业论坛开幕

2024年5月27日，泰国第一届国际农业论坛在楠府开幕，主题为“生物多样性和农业可持续性新区域发展”。诗琳通公主主持开幕式，中国驻泰国大使韩志强等嘉宾致辞。600多名来自10个国家和地区的政府和民间代表参与，探讨国际农业合作和可持续发展。诗琳通公主希望此次论坛为楠府和泰国带来积极影响，促进全球农业可持续发展。

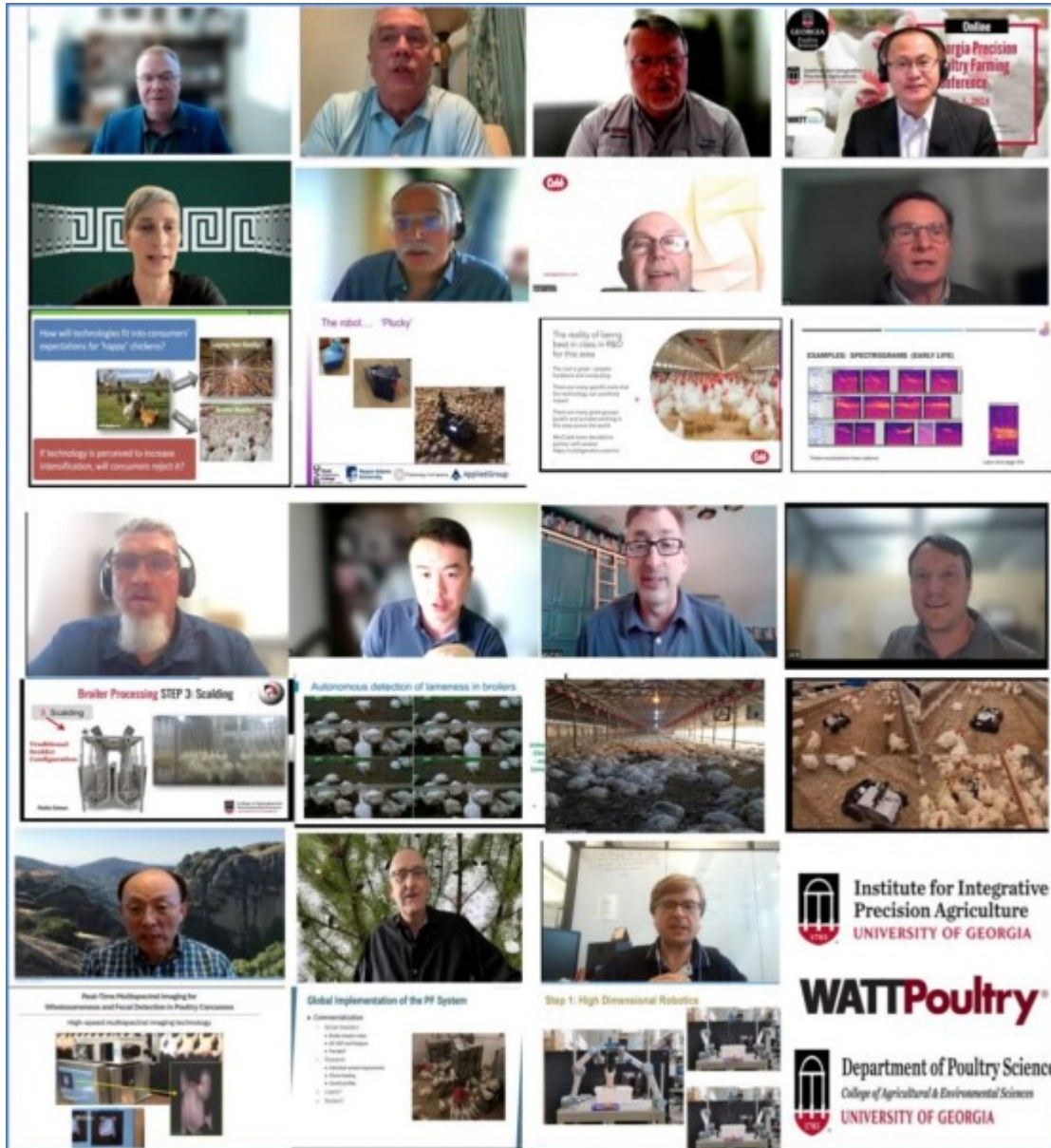


韩志强在致辞中强调，中泰两国在农业现代化和可持续发展领域的合作卓有成效，特别是在种植和农业技术方面。中方与猜帕塔纳基金会合作的山地开发和油茶种植项目发挥了重要示范作用。伍万通在采访中表示，楠府通过学习中国的先进技术，旨在解决森林减少问题，恢复森林覆盖率，推动可持续发展。

此次论坛由楠府森林保护基金会主办，86家机构参与了农业创新展览和社区土特产品展览。会议期间，12家泰中合作伙伴机构在楠府签署了《楠府宣言》，目标是提高农产品质量，促进水源森林的可持续恢复与开发。论坛旨在通过国际合作，为楠府乃至全球农业可持续发展提供新路径和解决方案。

UGA held a successful 2024 Georgia Precision Poultry Farming Conference

The Poultry Science Extension team at UGA held our 4th annual Georgia Precision Poultry Farming Conference virtually on May 1st, 2024. This year’s conference received about 380 registrations (e.g., poultry farmers, producers, service company managers, researchers, and students) from over 20 countries.

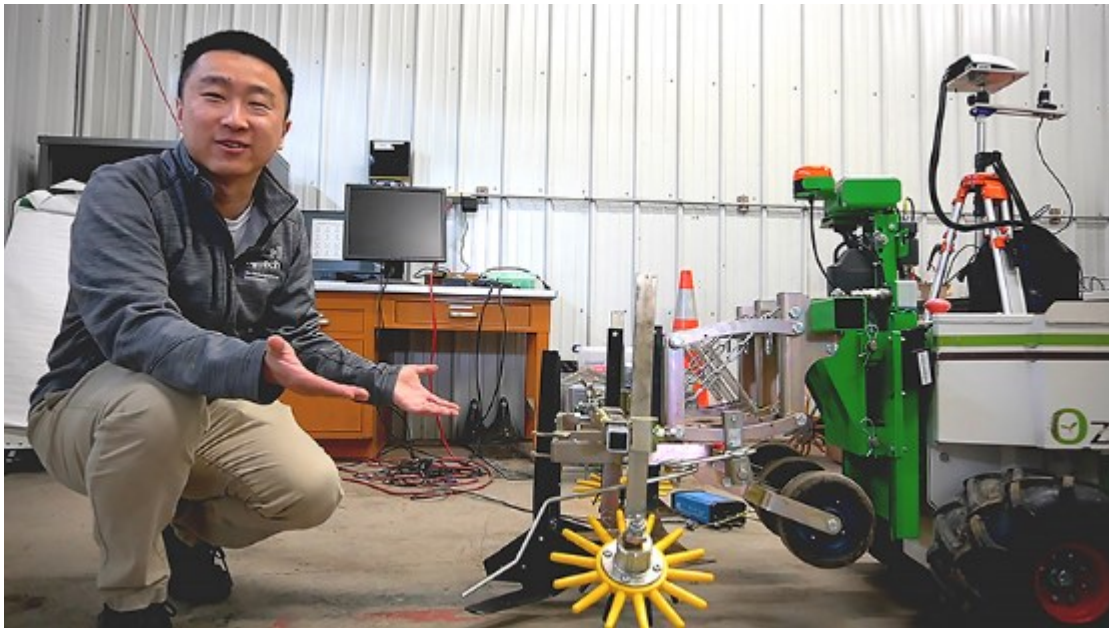


Scientists Harness Robots and AI to Revolutionize Farming

Models Can Analyze and Identify Pathogens with Accuracy Equivalent to or Exceeding Human Experts

At Cornell AgriTech, formerly the New York State Agriculture Experiment Station, scientists are unleashing the power of robotics and artificial intelligence to tackle major challenges facing farmers and drive a revolution in agricultural productivity and sustainability.

“My program here really emphasizes agriculture robotics and image analysis for farm monitoring, precision management to enhance productivity, quality, and finally, profitability,” said Dr. Yu Jiang, Assistant Professor of Cyber-Agricultural Intelligence and Robotics (CAIR) Laboratory at Cornell AgriTech.



One core focus of Jiang’s work is harnessing imaging robots and cutting-edge AI models to rapidly accelerate research on plant diseases, genetics and optimizing cultivars for regional conditions. “In the past four decades, we found probably 20 genes that control disease resistance to grapevine powdery mildew,” he explained. “But in 2023 alone, with just eight of our specialized imaging robots and our AI analysis systems, we found 60 more genes that can potentially control that devastating disease.”

Microscope Imaging Robots

The robots, which Jiang refers to as “microscope imaging robots,” acquire high-resolution microscopic images at a blistering pace. “Our robots can acquire these microscopic images to understand disease progression at least six times faster than traditional manual methods that require a technician to slowly observe samples under a microscope,” Jiang said.

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The AI models then analyze and identify pathogens in the images with accuracy equivalent to or exceeding human experts. “Combining robotics and AI, we achieve at least 100 times faster throughput in revealing phenotypic changes and supporting the discovery of disease resistance genes compared to old methods,” he said.

The rapid speed allows researchers to quickly identify desirable genetic traits and disease-resistant plant cultivars customized for regional farm conditions. Imagine a world where every farm is able to custom order seeds that are specifically tailored to the conditions at individual farms! “At the end of the day, we’ll have grape cultivars that produce the needed quality, taste and yields for wine making in New York,” Jiang stated, “but with natural resistance to powdery mildew and requiring much lower use of chemical fungicides.”

Robots Helping in Labor Shortage

Robotics is also being leveraged to help growers overcome worsening farm labor shortages. “Here in the U.S., only 3% of the population works in agriculture to feed all the rest,” Jiang noted. “Many fruit and vegetable growers face critical labor shortages that impact profitability.”

New robotic systems developed at Cornell could offer relief. “We can rely on coordinated swarms of agricultural robots that can autonomously perform jobs like precision pruning, harvesting, spraying and weeding much faster and with far better accuracy than manual labor,” Jiang said. “This will enable growers to dramatically reduce labor costs and improve quality, while also opening opportunities for higher-skilled technical jobs maintaining and servicing the robots.”

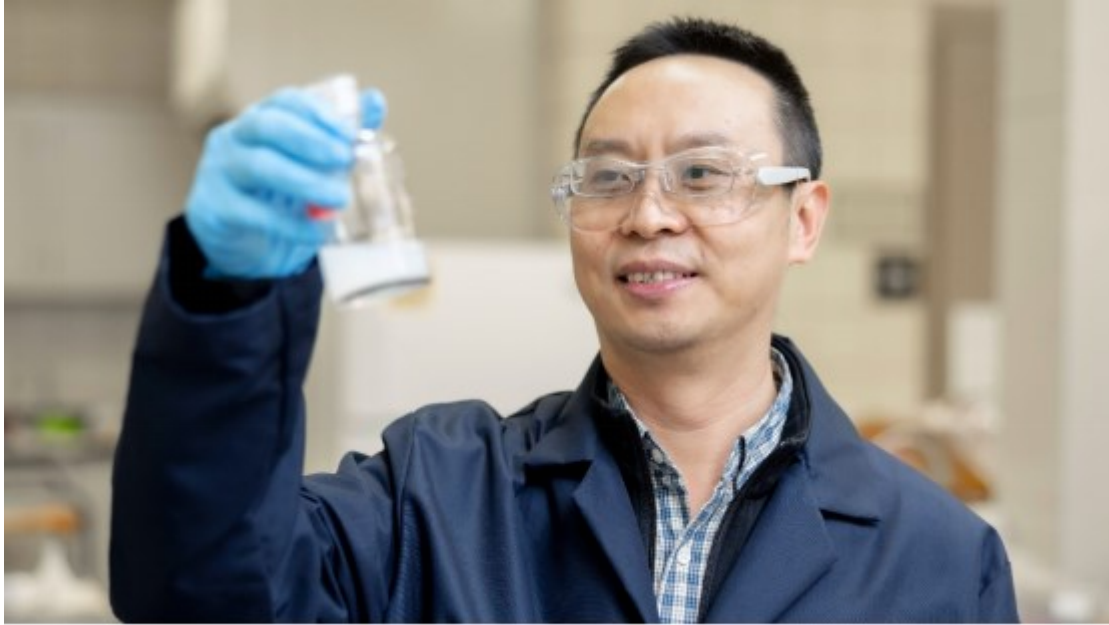
Another key challenge being tackled is integrated weed management in the face of reduced herbicide options. “With fewer chemicals approved for use, we must find new ways to control weeds without negatively selecting for resistant strains,” Jiang explained. “We are developing robotic mechanical weeding, laser guidance systems that precisely burn individual weeds, and electrocution robots that use high voltage electricity to kill weeds from the top down to the roots. Our goal is to create an optimal integrated system that balances the use of chemical, mechanical, and novel technology methods to sustainably manage weeds long-term.”

Jiang has a strong belief that agriculture stands at an inflection point enabled by technology. “We now have a huge opportunity to use robots, AI, and intelligent decision-making as a fundamentally new way of farming,” he said. “It’s no longer about manual labor - we can develop robotic assistants and data-driven practices that help farmers be more efficient, profitable, and environmentally sustainable.”

“For students interested in technology and making an impact, this is the best time to get involved in agriculture and be part of pushing it boldly into the future. By combining nature, technology, and big ideas, the next generation of agricultural innovators can revolutionize how we produce food and sustain farming communities,” he said.

University of Kentucky researchers lead a national team, transforming solid waste into aviation fuel

LEXINGTON, Ky. (April 25, 2024) — In a move towards sustainable energy and waste management, the University of Kentucky has launched a pioneering research initiative that seeks to turn everyday trash into high-quality sustainable aviation fuels (SAF).



Awarded \$2.12 million from the DOE, Jian Shi, Ph.D., is leading a multi-institutional team to create sustainable jet fuel while reducing landfill waste. Photo by Sabrina Hounshell.

Titled "Surface Enhanced Smart Preprocessing of Municipal Solid Wastes for Year-Round Supply of Conversion-Ready Feedstocks," the study aims to address excessive landfill waste. Led by Jian Shi, associate professor in the Martin-Gatton College of Agriculture, Food and Environment Department of Biosystems and Agricultural Engineering (BAE), this project has been awarded \$2.12 million in federal funding from the Department of Energy (DOE).

The United States currently faces a critical challenge with over 50% of municipal solid waste (MSW) ending up in landfills, leading to increased greenhouse gas emissions and resource loss. This project seeks to address these issues head-on by developing innovative technologies to enhance the surface properties and uniformity of MSW feedstocks — facilitating their efficient conversion into biofuels and bioproducts.

"We are embarking on a journey to divert landfilled waste for bioenergy production," Shi said. "Our goal is to transform municipal solid waste from an environmental burden into a valuable resource, paving the way for sustainable, clean energy solutions."

The project is a collaborative effort involving a multi-institutional team, including researchers from Iowa State University, Idaho National Laboratory, Red Rock Biofuels and Wasatch Integrated Waste Management.

University of Kentucky researchers lead a national team, transforming solid waste into aviation fuel

Spanning 36 months, the initiative aims to:

- Develop novel blending and densification strategies to improve the stability and convertibility of waste plastics with biomass feedstocks.
- Implement mechanical separation methods to remove inorganic contaminants from MSW.
- Create a rapid, nondestructive 3D imaging technology for comprehensively characterizing MSW fractions.
- Use deep learning-based predictive models to guide preprocessing strategies and optimize feedstock quality.

“The team wants to try and leverage advanced 3D imaging and hyperspectral technologies to identify and categorize waste materials,” Shi said. “This technological approach allows for the efficient sorting of waste components suitable for biofuel conversion, a critical step managed through machine learning algorithms. These algorithms, akin to those used by tech giants for image recognition, play a crucial role in determining waste composition and optimizing the sorting process.”

Upon completion, the project is expected to deliver a novel preprocessing strategy tailored for converting non-recycled MSW into high-quality, conversion-ready feedstock for SAF biorefineries. This will mark a significant milestone in advancing biofuels and bioproducts research, promoting sustainable MSW-based bioeconomy and addressing the technical risks associated with the thermochemical conversion of MSW to SAF.

By turning trash into valuable jet fuel, Shi and his team are not just addressing environmental issues but are also paving the way for a sustainable industrial model that other sectors might emulate.

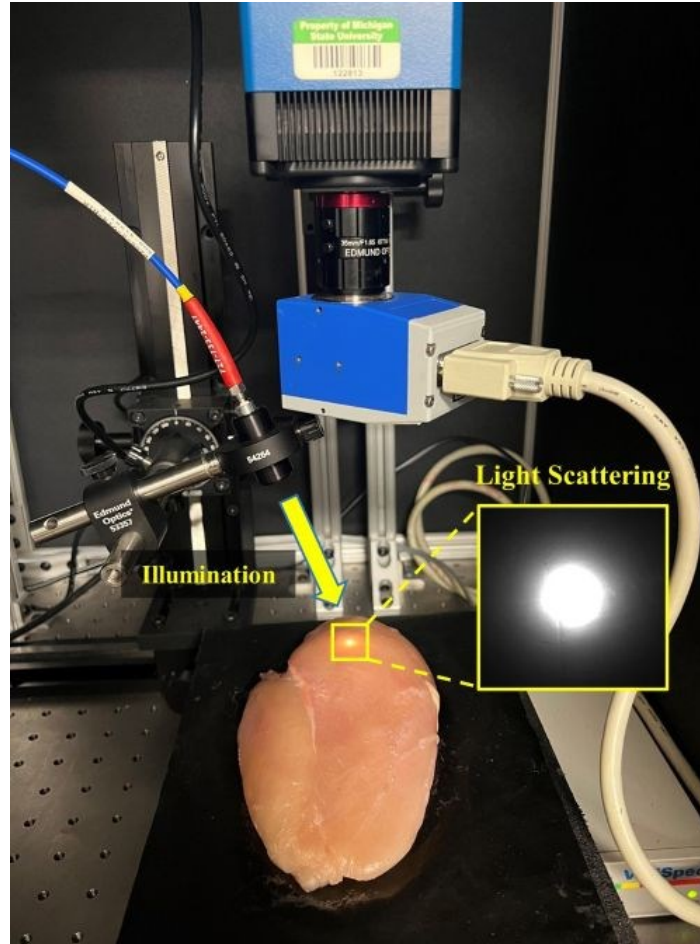
“We’re aiming to close the loop between waste generation and energy production,” said Mike Montross, BAE professor and co-principal investigator of the project. “We want not only to reduce landfill use and greenhouse gas emissions but also to enhance energy security by developing domestic, renewable energy sources.”

This material is based upon work supported by the Department of Energy under Award Number DE-EE0010295. This report was prepared as an account of work sponsored by an agency of the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

As the state’s flagship, land-grant institution, the University of Kentucky exists to advance the Commonwealth. We do that by preparing the next generation of leaders — placing students at the heart of everything we do — and transforming the lives of Kentuckians through education, research and creative work, service and health care. We pride ourselves on being a catalyst for breakthroughs and a force for healing, a place where ingenuity unfolds. It’s all made possible by our people — visionaries, disruptors and pioneers — who make up 200 academic programs, a \$476.5 million research and development enterprise and a world-class medical center, all on one campus.

MSU researcher develops imaging-based method of identifying defects in poultry production

Yuzhen Lu, Biosystems and Agricultural Engineering assistant professor, is developing a new imaging-based method of identifying muscle myopathy in poultry production.



In food systems, consumers drive many of the changes producers make in their production practices. This change can be seen in both food and animal production, and poultry production is no exception. Breast meat, also known as white meat, is generally considered healthier and more desirable to consumers. Producers have been selecting birds for larger breasts to get more meat per bird. This meets consumer demands but has come with new challenges.

One of those challenges is the prevalence of muscle myopathy, which is a change in muscle texture that downgrades meat quality. Muscle myopathy such as woody breast and white striping are having a high economic impact on producers. Identifying muscle myopathy has usually been done by skilled personnel in production lines during processing, which is labor-intensive and subjected to human evaluation error. Yuzhen Lu, Ph.D., is a Biosystems and Agricultural Engineering assistant professor and has been developing a new imaging-based method of identifying muscle myopathy that is non-destructive, objective, and amenable to automation. The goal is to maintain a high-quality product, provide quick and accurate identification of the muscle myopathy, while providing cost savings to the poultry processors.

MSU researcher develops imaging-based method of identifying defects in poultry production

“The poultry processing industry is operating on small margins.” said Lu. “This industry has a notoriously high labor turnover rate. Processors are under mounting pressure to reduce labor dependence and costs while delivering higher quality products, to remain competitive and profitable.”

Lu’s focus is the use of optical imaging technology and deep learning in Artificial Intelligence (AI) systems to help processors identify myopathies and improve quality control. Optical imaging technology uses cameras to look at the meat for defects. The deep learning aspect is when the system takes all the historical knowledge and images given to it by developers to learn to identify muscle myopathy effectively. As the system identifies more defects, it will get faster and more accurate in identification.

“AI models are data-hungry and computationally intensive.” said Lu. “But with dedicated hardware and optimized model architectures, they can be readily used for online meat inspection at video frame rates.”

Identifying muscle myopathy in poultry is essential because the meat is condemned and pulled from the production line so it is not purchased by consumers. Consumers demand high-quality products when shopping in grocery stores and grocery stores will not buy from producers that are sending low-quality products.

Lu’s work on poultry meat imaging was formerly funded by USDA-NIFA-AFRI. He is currently partnering with the Michigan Alliance for Animal Agriculture to develop a light scattering imaging technique for woody breast assessment.



浙江大学农业人工智能研究方向（林涛研究员/杨易教授联合课题组）博士后招聘启事

招聘启事：浙江大学农业人工智能研究方向（林涛研究员/杨易教授联合课题组）因工作需要，依托浙江大学生物系统工程与食品科学学院和计算机科学与技术学院，公开招聘全职博士后2名。热忱欢迎农业工程、计算机科学与技术、遥感科学与技术、信息与电子工程、植物科学等跨学科博士科研人员申请，加入农业人工智能（AI for Agriculture）交叉研究团队。

研究方向：

（1）大田粮食生产监测系统研究：主要开展基于多源卫星遥感、气象、土壤和农机数据，通用人工智能算法和过程机理模型融合的作物物候监测、作物分类和作物生长模型研究；

（2）植物工厂数字化管理技术研究：植物工厂草莓和叶菜作物生长模型、种植管理环控优化模型、作物表型数据在线解析系统等。

博士后合作导师：

1. 林涛

国家级青年人才计划入选者，浙江省特聘专家。目前担任浙江大学智能农业装备研究所副所长。长期从事农业数据科学与人工智能的研究工作，聚焦设施和大田农业作物生长管控算法、模型和数字化作物生长管理决策支持系统。主持国家重点研发计划课题2项和子课题1项、浙江省杰出青年基金、国家自然科学基金和浙江省尖兵研发攻关等国家和省部级项目。以第一作者或通讯作者发表SCI论文40余篇，其中包括《Nature Food》封面文章，以及《Global Change Biology》《Remote Sensing of Environment》等高水平期刊。以第一发明人获国家发明专利授权7件，美国PCT发明专利3件。相关信息见：<https://person.zju.edu.cn/lintaolab>

2. 杨易

浙江大学求是讲席教授（二级教授）、计算机科学与技术学院副院长、微软-教育部视觉感知重点实验室主任、人工智能省部共建协同创新中心副主任。主要研究方向为人工智能及其应用。所发论文Google Scholar引用6万余次，H-index 120，近6年连续入选Clarivate Analytics全球高被引学者。获教育部全国优秀博士论文（2010）、澳大利亚基金委青年研究职业奖（2013）、澳大利亚计算机学会颠覆创新金奖（2016）、谷歌学者研究奖（2016）、澳大利亚科研终身成就奖（2019）、亚马逊机器学习科研奖（2020）、IJCAI最具影响力论文（2021）、ACM MM唯一最佳论文奖（2023）等多项AI领域国际奖项，以及20余次国际科研竞赛世界冠军。

任职条件：

- （1）有上述领域的实际研究经验；
- （2）已发表高水平学术论文；
- （3）具有良好的学术道德和科研诚信、较强的科学研究能力、沟通交流能力和团队协作精神。

薪酬待遇：

- （1）首聘期为2-3年；
- （2）工资及福利待遇按浙江大学博士后相关规定执行：年薪24万元起，合作导师视工作绩效另提供科研奖励；
- （3）博士后出站后优先推荐申请浙江大学相关教职；
- （4）可申请租赁学校博士后公寓；
- （5）人事关系进入浙江大学后从事博士后研究工作2年及以上的博士后研究人员，可申报浙江大学高级专业技术职务；
- （6）积极支持博士后申报国家及省部级科研项目，提供参加国内外高水平学术会议或国际著名大学学习交流的机会，并根据志向支持个人的职业规划与发展；
- （7）支持申报博士后创新人才支持计划、博士后国际交流计划引进项目
- （8）博士后出站入职杭州工作者可获得政府资助的安家费及各种人才补贴。

应聘方式：

有意向者请将个人简历和1-3篇代表性论文全文合并为一个PDF文件，发送邮箱（lintaol@zju.edu.cn），主题注明“博士后应聘+本人姓名”。应聘材料我们将予以严格保密。收到材料并初审通过后，我们会尽快与申请人联系并安排面试。本博士后招聘启事长期有效，招满为止。热诚欢迎优秀博士毕业生的加盟！

联系方式： 联系人：林老师

E-mail: lintaol@zju.edu.cn



PhD Fellowship in Climate-smart Agriculture: Crop Sensing, Modeling and AI

Join Dr. Johnny (Liujun) Li's group at the Precision Agriculture and Intelligent Robotics Laboratory (PAIR), funded by a 5-year \$55 million USDA climate-smart agriculture grant. We're seeking a Ph.D. Research Assistant to contribute to our work in remote sensing, crop modeling, and deep learning for climate-smart agriculture. This includes, but is not limited to, agriculture robotics, deep machine learning, remote sensing data assimilation with process models for precision agriculture, plant phenotyping, GHG monitoring, and quantification. We're dedicated to advancing technology that encourages climate-smart agriculture practices among farmers and addresses grand challenges in agriculture through collaboration and innovation.

Start Date: Fall 2024 or Spring 2025

Qualifications:

- B.S./M.S. in Agricultural Engineering, Mechanical/Electrical Engineering, Computer Science, or related disciplines.
- Experience or interest in agriculture robotics, drone remote sensing, computer vision and AI, crop modeling, GHG monitoring, and measurement.
- Strong programming skills (Python, C/C++, MATLAB).
- Please refer to the [Academic Requirements-Graduate Admissions-University of Idaho \(uidaho.edu\)](https://uidaho.edu/academic-requirements-graduate-admissions) for the minimum requirements for the Ph.D. position.

Application Process: Interested candidates should email their application (one PDF file) to Dr. Li at liujunl@uidaho.edu with the subject line "PhD applicant for Climate-smart Agriculture". The application should include a CV, a cover letter indicating research experience/interest and future plans, and three references. Additional transcripts and test scores may be required for the research assistant position. Reviewing and interviewing of applications will begin immediately and continue until the positions are filled.

About University of Idaho: The University of Idaho, a public land-grant university founded in 1889, is ranked in the top 8% of the best colleges in the nation (Princeton Review). Our beautiful campus in Moscow, Idaho is recognized as the No.1 Best value public university in the West (U.S. News and World Report) and one of the 25 Best outdoor schools in America (Best College Reviews). Our students have access to cooperative courses and automatic transcript exchange offered at Washington State University, another major land-grant institution 10 miles away. The Pullman-Moscow Regional Airport connects our unique area with the rest of the Pacific Northwest, making travel affordable and convenient.



Research Assistantship on Agricultural Robotics and AI

The Bio-Sensing Automation and Intelligence Laboratory (B-SAIL) (www.uflbsail.net) in the Department of Agricultural and Biological Engineering at the University of Florida is seeking highly motivated graduate students for Ph.D.-level research assistantships (RA) in agricultural sensing, automation, and AI. We are currently accepting applications for these positions, which will be reviewed on an ongoing basis.

As a top-ranked institution, the University of Florida (UF) is ranked #29 in National Universities and #5 in public universities in the 2022-2023 rankings by the US News and World Report. B-SAIL is a research laboratory dedicated to developing innovative sensing and automation technologies for agricultural and food systems. Funded by research grants from the National Institute for Food and Agriculture, the National Science Foundation, and industry partners, the RA positions will involve working on projects to develop robotic technologies, computer vision, and deep learning technologies for high-throughput plant phenotyping, precision crop management, and postharvest food quality sensing.

Successful candidates should have relevant experiences and interests in one or more of the following areas: computer vision, mechatronics, robotics, electronics, sensing, and machine learning/deep learning. Additionally, candidates should possess strong programming skills in one or more of the following languages: Python, MATLAB, LabVIEW, C/C++, Java, and IDL. A proven ability to publish research in peer-reviewed journals and a willingness to learn new technologies is also desirable.

Interested applicants should send their curriculum vitae, a list of three references, and transcripts to Dr. Changying “Charlie” Li at cli2@ufl.edu.



WASHINGTON STATE
UNIVERSITY

Open Position – Postdoctoral Research Associate

Position Summary : Washington State University is seeking a Postdoctoral Research Associate specializing in food and biomaterials engineering. The goal of this project is to develop novel multifunctional materials and intervention approaches for addressing microbial safety and sustainability issues within food and agricultural systems. This is a full-time, 100%FTE position with an annual salary of \$54,000 – \$60,000 plus WSU fringe benefits, immediately available for one year to support research activities under the direction of the principal investigator, with a possibility of renewal based on performance and continued funding.

Position Duties : The role of this postdoc position encompasses a variety of responsibilities:

- conducting independent research in the area of food safety and sustainability;
- developing scholarly manuscripts, presentations for scientific conferences, and reports for the USDA to disseminate research findings;
- mentoring students and managing the laboratory under the supervision of the advisor;
- assisting in identifying funding sources and drafting grant proposals;
- engaging in relevant extension activities;
- performing other research-related tasks as needed.

Required Qualifications :

- A PhD in material chemistry, food engineering, or a related field.
- Strong theoretical background and experimental experience in material synthesis and characterization, and their applications in food safety.
- Basic knowledge and skills in conducting microbiological analysis on foods and food systems.
- Strong written and oral communication skills with ability to publish manuscripts.

Preferred Qualifications :

- Preference will be given to applicants with strong publication records, considerable drive and motivation, and excellent problem-solving skills.
- Experience in functionalization of cellulose materials.

How to Apply:

- Inquiries and applications can be submitted to Dr. Kang Huang at kang.huang@wsu.edu.
- Applications will be reviewed on a rolling basis starting immediately until the position is filled. Early submission is strongly recommended.
- Please include 1) a cover letter summarizing their interests in the position and qualifications, 2) a CV, and 3) contact information for three references.



Assistant Professor, Meat Scientist

Job Description: The School of Animal Sciences is searching for an Assistant Professor of Meat Science. This is a tenure-track, 9-month appointment with responsibilities in research (60%) and Extension (40%). The ideal candidate for this position must have a strong background in meat science and is expected to generate scholarly outputs that will establish a national reputation in their field of interest. In addition, the successful candidate will be expected to develop a vibrant Extension program that serves various stakeholders in the meat industry in the Commonwealth and across the nation. Programs of interest include but are not restricted to antemortem factors affecting meat quality, fresh meat quality, further processing or food safety. The individual will contribute to existing Extension programming that serves processors, producers, youth, and consumers. The successful candidate will have access to research laboratories with state-of-the-art equipment, a fully functional abattoir and meat processing facility but may need to travel off-campus as needs arise. The candidate is expected to contribute to the teaching mission through engagement in undergraduate and/or graduate-level courses in their area of expertise. Interaction with undergraduate and graduate students is required. Advancement of equity and inclusion in all facets of the position is expected. Position requires occasional travel to attend conferences and meetings. Successful candidates will require a successful background check.

Required Qualifications: Candidates must have: 1) a Ph.D. in animal sciences/meat science or a closely-related field by appointed start date; 2) promise to develop and lead a research program and attract extramural funding; 3) a willingness to translate knowledge to stakeholders; 4) a strong interest in education; 5) outstanding interpersonal, oral and written communication skills, particularly in communicating science to lay audiences; and 6) Position requires occasional travel to attend conferences and meetings

SALARY: Commensurate with education and experience. Virginia Tech offers a comprehensive benefits package.

DATE AVAILABLE: August 10, 2024

APPLICATIONS: Deadline for applications is June 1, 2024 or until the position is filled. Candidates must submit online (<https://www.jobs.vt.edu>) a letter of application, curricula vitae, graduate transcripts, statements of diversity, research and teaching interests, and the contact information for at least three professional references. Correspondence should be addressed to:

Dr. Dan Eversole

School of Animal Sciences

3250 Litton-Reaves (0306)

Virginia Tech

Blacksburg, VA 24061-0306

deversol@vt.edu

540/231-4738



Assistant Project Scientist - Zhou Lab

Position Description: Dr. Huaijun Zhou is looking to hire an Assistant Project Scientist

With supports from the USDA NIFA and FFAR, UC Davis is leading an effort on identifying causative genetic variants associated with economically important traits in farm animals by integrating “omic data” generated in Dr. Huaijun Zhou’s lab and collaborators’ laboratory worldwide and available in public database. Different bioinformatic and statistical methods need be utilized and developed in processing and analyze data. In addition, the project scientist will be involved in functional annotations of animal genomes supported by USDA. The Assistant Project Scientist will be responsible for coordinating data collection, data processing, bioinformatics pipeline, and statistical model development, data analysis, interpretation and manuscript writing within Dr. Zhou’s lab and among other collaborators’ laboratory at national and international level. The incumbent is expected to make significant and creative contributions to the research projects, and to possess the subject matter expertise and the creative energy necessary to function at a high level of competence. The appointee will participate in activities to increase, improve, or upgrade competency.

Appointees with Assistant Project Scientist titles may engage in University and public service. The appointee does not have teaching responsibilities. The Assistant Project Scientist is expected to work independently under the general guidance of Dr. Huaijun Zhou, and is not expected to develop an independent research program or reputation. He/she will carry out research with supervision by the Principal Investigator (Dr. Zhou). The Assistant Project Scientist does not usually serve as a Principal Investigator but may do so if needed

Required Qualifications: Basic qualifications (required at time of application)

- Ph.D. in animal breeding and genetics, or related field.
- 3+ years of postdoc experience in “omic” data analysis including but not limited to, long- and short-read whole genome sequences, bulk and single-cell RNA-Seq, ATAC-Seq, ChIP-Seq, and Hi-C.
- Excellent programming skills, with fluency in R, bash, and Python.
- 3+ years research experience on High Performance Computing (HPC) systems and building reproducible and scalable computational pipeline using tools such as Snakemake.
- Experience in comparative epigenomic analysis including farm animal species

Additional qualifications (required at time of start)

- At least 5 peer-reviewed publications in “omic” data analysis as a first author or senior author.
- In-depth knowledge in FAANG, Farm GTE_x, and ENCODE analysis

Preferred qualifications (other preferred, but not required, qualifications for the position)

- Communicates and collaborates well with lab members and colleagues in other labs and at other institutions.
- Experience supervising and training lab personnel in bioinformatics.
- Experience troubleshooting and optimizing methods for “omic” data integration.

Salary range: The salary range for this position is \$71,500 - \$91,000 . “Off-scale salaries”, i.e., a salary that is higher than the published system-wide salary at the designated rank and step, are offered when necessary to meet competitive conditions, qualifications, and experience.

Apply link: <https://recruit.ucdavis.edu/JPF06537>

Help contact: llovgren@ucdavis.edu



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The 2023-2024 IMPACT editorial Board earnestly invites you to submit news and activity reports related to ASABE and AOC. Please send your write-up and/or picture news to the Editorial Board at aoc.impact@gmail.com. The IMPACT Board will work with you to put your news into the publication.

It is our publication and it is your publication. We sincerely thank each and every AOC members for their support!

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