SYMPOSIUM PROGRAMS

ISMAB 2024

The 11th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering

27–29 September, 2024

The Patra Bali Resort & Villas, Bali, Indonesia

Japanese Society of Agricultural Machinery and Food Engineering (JSAM)

Korean Society for Agricultural Machinery (KSAM)

Chinese Institute of Agricultural Machinery (CIAM)

Indonesian Society of Agricultural Engineering (ISAE)

ASEAN Conference on Agricultural and Biosystem Engineering (ACABE)

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Greetings

On behalf of the organizing committee, I would like to express my sincere gratitude to all the participants of the 11th International Symposium on Machinery and Mechatronics for Agricultural and Biological Systems Engineering (ISMAB 2024). ISMAB has been held in Japan, Korea, and Taiwan. However, this time, thanks to the understanding and cooperation of JSAM (Japanese Society of Agricultural Machinery and Food Engineers), KSAM (Korean Society for Agricultural Machinery) and CIAM (Chinese Institute of Agricultural Machinery, Taiwan), the full cooperation of ISAE (Indonesian Society of Agricultural Engineering) as a member of ACABE (ASEAN Consortium on Agricultural and Biosystem Engineering), and additionally, we received generous support from Kubota Co., Yanmar Co., Ltd., ISEKI & Co., Ltd., Shibuya Seiki Co., Ltd., and YS Lab LLC., ISMAB2024 was held in Bali, Indonesia, successfully. We had a very fulfilling symposium with 291 participants, 173 oral and 78 poster presentations. We would like to express our gratitude to them here.

ISMAB is holding its 11 times this year since the first international symposium was held in Chiayi City, Taiwan in 2002. ISMAB is a very valuable international symposium where scholars, researchers, engineers, experts, and students in the field of agricultural food and biosystems engineering gather to share research content and results related to agricultural machinery, mechatronics and robots, data-driven agriculture, biosystems engineering, post-harvest technology, and next-generation food systems. We believe that by actively interacting with each other and exchanging the latest information, we can make a significant contribution to solving various problems related to agrifood systems caused by frequent abnormal weather, a growing global population, and diversifying consumer needs. Moreover, in recent years, various conflicts have occurred around the world, and food security is a significant concern for all countries. In particular, more than half of the world's population lives in Asia, and strengthening food security in Asia is an extremely important initiative contributing to Asia's sustainable development.

We sincerely hope that this international symposium will be fruitful for everyone, that new friends will be made, and that friendships will be deepened. The potential for new connections and collaborations is one of the most exciting aspects of ISMAB, and we hope you take full advantage of it.

Takashi Okayasu, Ph.D.
General Chair of ISMAB 2024
Professor, Kyushu University

Keynote Speech 1

CURRENT STATUS AND FUTURE OF SMART AGRICULTURE IN JAPAN

Michihisa Iida

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Abstract: Over the next 20 years in Japan, the number of core agricultural farmers is expected to decrease to about one-quarter of the current number (from 1.16 million to 0.3 million). Agricultural production based on traditional production methods will not be able to ensure the sustainable development of agriculture or a stable supply of food. Therefore, in order to establish a highly productive food supply system that can maintain production levels even with a declining number of farmers, it is necessary to promote a shift in production methods while also utilizing smart agricultural technologies that contribute to the efficiency of agricultural work. To maintain stable agricultural production with a small number of people and improve yields and quality, smart agriculture has been promoted since 2019. Initially, the aim was to improve yields and quality while reducing production costs by introducing robot technology (RT) and internet communication technology (ICT). After six years of smart agriculture demonstration projects lasts for 6 years. As a result of this project, it will be necessary not only to further improve and develop agricultural RT and ICT, but also to transition traditional cultivation systems to ones that are suitable for robotic work. In agriculture, it is necessary to develop robots that can perform highly difficult farm tasks. In addition, it is important to collect and analyze data on all cultivation practices. In this speech, I will introduce the current status of smart agriculture in Japan and the agricultural technologies that are expected to be used in the future.

Keywords: Robot technology, Internet communication technology, Data-driven agriculture, Data transformation, Sustainable agriculture

Keynote Speech 2

TRENDS OF SMART AGRICULTURE POLICY AND TRANSITION TO DIGITAL AGRICULTURE IN SOUTH KOREA

Hyuck Joo Kim, Ghiseok Kim, Ryugab Lim

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Abstract: Recently, South Korea is facing the crisis of climate change, and the shortage of agricultural labor is becoming more serious as 46.8% (‘21) of the agricultural population is over 65 years old. The Korean government as well as the private sector are paying much attention and investment to smart agriculture to reform Korea’s agricultural fundamentals. In particular, the domestic smart farm-related market grew from USD 2.7 billion (‘15) to USD 5.4 billion (‘22), and the Korean government has implemented measures to foster smart farms, such as fostering young professionals through the establishment of a youth startup ecosystem, establishing four smart farm innovation valleys(100 million USD/each) as base camps, etc. The Korean government budget investment has increased significantly from USD 34.6 million (‘14) to USD 256 million (‘20), and a similar budget is being invested in Korea’s smart farm industry every year. They are implementing the ‘Agricultural and Food Venture Promotion Support Project’ and the ‘Smart Farm ICT Equipment National Standard Expansion Support Project’ to foster agricultural and food venture companies, and are conducting various R&D projects. In particular, various projects are being carried out recently to build a big data-based platform for the creation of an AI-integrated smart agriculture hub complex. Digital agriculture is a means that can well reflect the integrated form of agriculture that goes through various stages of production-post-harvest management-storage-distribution-marketing, and the government and private sector are building a data platform that can collect, process, and distribute data in many fields, and the government is building and utilizing a big data center centered on platforms called smartfarmkorea.net and others together with farmers and private companies.

Meanwhile, the Korean government enacted the Smart Agriculture Promotion Act in 2023 to expand the spread of smart agriculture and is implementing it from 2024. Based on the Act, the government and local governments plan to establish a five-year basic plan and proceed with establishing smart agriculture support center, designating smart agriculture professional training institutions, promoting smart agriculture technology development and standardization, and designating smart agriculture support base complexes and promotion zones on an annual basis. As a result of this investment, it is expected to expand smart agriculture (smart greenhouses 14% (‘23) → 30% (‘27)), expand smart agricultural companies (23 (‘21) → 100 (‘27)), and expand smart farm exports (USD 296 million (‘23) → USD 800 million (‘27)).

Smart agriculture in Korea is growing rapidly based on technological advancements and government support, contributing to improving agricultural productivity and creating a sustainable agricultural environment. However, there are still challenges such as initial costs and education issues related to technology introduction, expansion of smart farm technologies into fields, and continuous efforts and investments are needed to solve these issues.

Keywords: Farm mechanization, Smart farm, Digital Agriculture, AI, Big data flatform

Keynote Speech 3

INTRODUCTION OF AGRICULTURAL MECHANIZATION, AUTOMIZATION, AND INTELLIGENTIZATION IN TAIWAN: CURRENT STATUS AND RECENT DEVELOPMENTS

Ching-Lu Hsieh

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Abstract: Agriculture is crucial for every country not only agriculture produces food, feed, and fiber, but also agriculture can offer substantiable environment and adorable village.In human history, agricultural power evolutes from animal and man labors to fossil oil and to electrical power. This is known as industrial evolution for agriculture 1.0 of indigenous tool to agriculture 4.0 of autonomous farming. For these four agricultural evolution periods, they are coexisted spatially and temporally. For instance, in Taiwan, tractor can be auto-guided by GPS and RTK in tillage operation while in some cases farmers still use hoe to prepare their land. Taiwan faces several challenges in agriculture, such as, labors shortage and aging, land scattered, and small market size. Agriculture sector contributes about 1.5% for Taiwan GDP at year 2023 while industry sector is 34% and service is 65%. The food self-sufficiency rate in calorie for Taiwan is around 30%, although pork and fishery are oversupplied. Normal labor shortage is about 15 thousand and seasonal labor shortage is about 210 thousand in year 2020. To tackle these challenges, central government initiated agricultural mechanization project from 1960s, and upgraded to automization in 1990 and to intelligentization project in 2017. Nowadays In Taiwan, the mechanization in rice, soybean, and corn is high but it still needs machines in vegetables, such as, onion, garlic, and cabbage. Recently, some automatic systems for agriculture have been developed in Taiwan, for instance, irrigation control system for paddy field, artificial light compensation system for orchid, and nursing system for vegetable seedling. Several autonomous machines have also been developed in Taiwan lately, such as, tea harvesting robot, grafting robot, spraying robot, and pepper disease detecting robot. History has told us that by using agricultural machines, the production efficiency can be upgraded, human burdens can be lightened. And our planet can be more sustainable and adorable. Let us put more effort on that and work in shoulder to shoulder to a better future.

Keywords: Agricultural Mechanization, Automization, Intelligentization, Internet of Things, Agricultural Robots

Keynote Speech 4

CHALLENGES TO INDONESIAN AGRICULTURAL DEVELOPMENT

Desrial

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Abstract: Agriculture is a cornerstone of Indonesia's economy and societal wellbeing, yet it faces critical challenges that threaten its future viability. This paper explores the four most pressing issues confronting Indonesian agricultural development, emphasizing their interconnections and implications for policy and practice. First, climate change is exerting a profound influence on Indonesian agriculture, manifesting through more frequent and severe weather events, shifting rainfall patterns, and rising temperatures. These changes disrupt traditional farming practices, lead to unpredictable crop yields, and exacerbate the vulnerability of agricultural systems. Farmers are struggling to adapt to these conditions, which in turn affects food security and rural livelihoods. The increasing frequency of droughts and floods, coupled with the rising incidence of pests and diseases, further complicates the agricultural landscape, necessitating urgent adaptation strategies and resilient agricultural practices. Second, a rapidly growing population intensifies the demand for food and agricultural resources, straining existing systems. The pressure to increase agricultural output to meet the needs of a burgeoning population strains existing resources and systems. This demographic challenge is compounded by urbanization, which reduces the availability of arable land and increases competition for resources. Addressing the needs of a growing population requires innovative approaches to boost productivity, improve resource management, and enhance food distribution networks. Third, escalating agricultural land conversion undermines convertion of productive rice field into industrial or housing purpose that decreasing harvested area main of crops and threatening long-term sustainability. Finally, insufficient investment in the agricultural sector hampers innovation, infrastructure development, and overall growth. Low investment in the agriculture sector hampers its development and growth potential. Insufficient funding limits the ability to adopt modern technologies, improve infrastructure, and enhance research and development efforts. This underinvestment affects productivity, efficiency, and competitiveness, making it challenging for Indonesian agriculture to thrive in a global market. Increasing investment in agriculture, supporting innovation, and improving access to financial resources are crucial steps to boost the sector's performance and resilience. The paper explores these challenges in detail and suggests strategies for mitigating their effects to foster a more resilient and productive agricultural sector in Indonesia. In conclusion, addressing these four challenges—climate change, population growth, land conversion, and low investment—requires a comprehensive and integrated approach. Policy interventions, investment in technology and infrastructure, and sustainable practices are essential for fostering a robust and resilient agricultural sector in Indonesia. By tackling these issues holistically, Indonesia can work towards ensuring food security, environmental sustainability, and economic stability for its agricultural sector.

Keywords: Climate changes, Land conversion, Food security

General Information

Registration Hours
Sep 27th (Fri), 8:00 - 12:00
Sep 28th (Sat), 8:00 - 12:00
The registration desk is located just beyond the Entrance Gate of the symposium venue.

Program/Abstract Book
The symposium program can be accessed on the symposium website.
A USB memory stick containing digital copies of the Abstract Book will be provided to all participants at the reception desk.

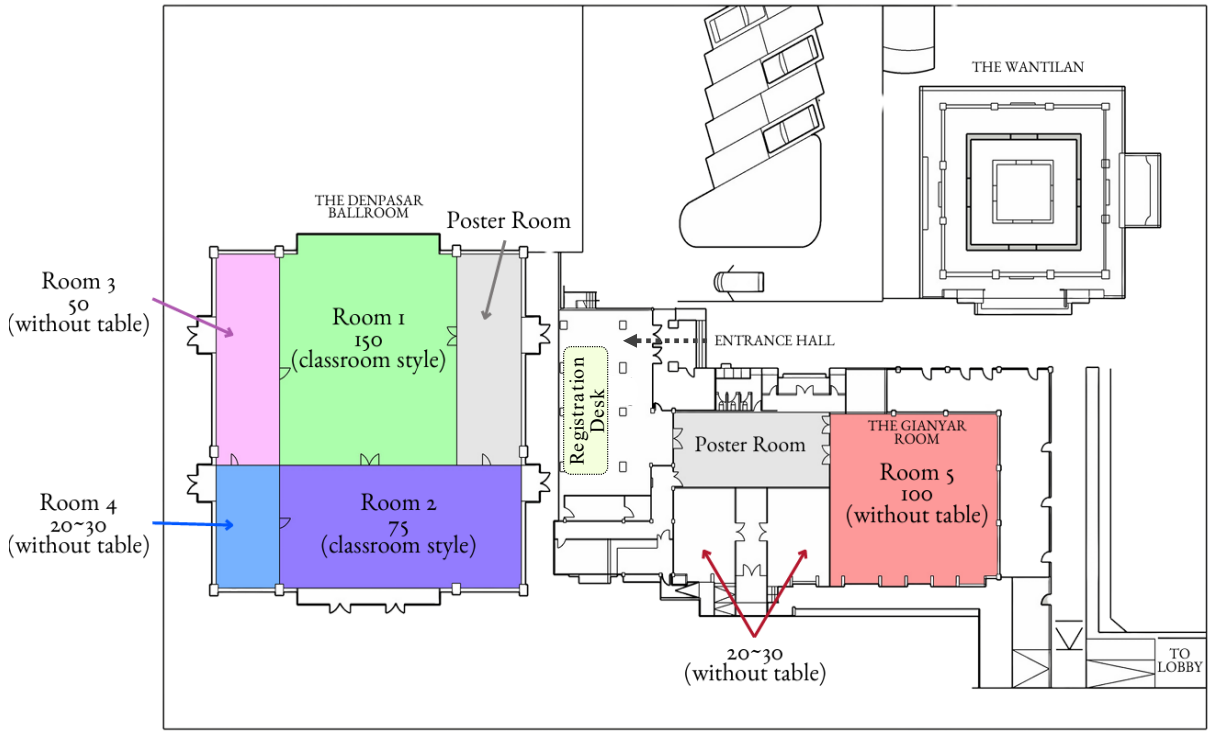
Refreshment (Coffee Break)
Coffee, tea and water will be served during the coffee break.

Photo and Video Recordings
Photographing, recording, or recording oral presentation slides and posters is prohibited to protect copyright and personal information.

Wi-Fi Access
Wireless LAN (Wi-Fi) will be available at the conference venue. Detailed information will be provided on-site on the day of the event.

Others
Please ensure that you always wear your participation card while at the venue.
Kindly set your cell phone to silent mode while inside the venue.

Symposium Venue and Access



Venue: The Patra Bali Resort & Villas
Address: Jl. Ir. H. Juanda South Kuta Beach, Tuban, Kuta, Badung, Bali 80361, Indonesia
Email: reservation@thepatrabali.com (hotel)
Tel : +62-361-9351-161 (hotel)

Schedule of ISMAB2024

Day 1 Schedule (Friday, September 27th, 2024)

Time	Program
8:00 – 9:00	Registration
9:00 – 9:05	Welcome Address by MC
9:05 – 9:15	Opening Dance - Kontemporer Dance
9:15 – 9:18	Singing Indonesia Raya
9:18 – 9:20	Praying
9:20 – 9:30	Welcoming Speech by Professor Takashi Okayasu *General Chairman of 11th ISMAB 2024*
9:30 – 9:45	Opening by Professor Ir. Ngakan Putu Gede Suardana, M.T. *Rector of Udayana University*
9:45 – 10:00	Photo Session & Break
10:00 – 11:00	Keynote Speech 1 'Current Status and Future of Smart Agriculture in Japan' *Professor Michihisa Iida (President of JSAM)*
	Keynote Speech 2 'Trends of Smart Agriculture Policy and Transition to Digital Agriculture in South Korea' *Professor Hyuck Joo Kim (President of KSAM)*
11:00 – 12:00	Keynote Speech 3 'Introduction of Agricultural Mechanization, Automization, and Intelligentization in Taiwan: Current Status and Recent Developments' *Dr. Ching-Lu Hsieh (Special Envoy of CIAM)*
	Keynote Speech 4 'Challenges to Indonesian Agricultural Development' *Associate Professor Desrial (Representative of ISAE and ACABE)*
12:00 – 12:15	Announcements from our sponsors
12:15 – 13:30	Lunch & Poster Viewing
13:30 – 15:00	Parallel Session 1 - Detail schedule separately
15:00 – 15:30	Coffee Break
15:15 – 18:05	Parallel Session 2 - Detail schedule separately
16:30 – 18:30	ISMAB & AABEA meeting

Schedule of ISMAB2024

Day 2 Schedule (Saturday, September 28th, 2024)

Time	Program
8:00 – 8:30	Registration
8:30 – 10:50	Parallel Session 3 - Detail schedule separately
10:50 – 13:30	Coffee Break & Lunch & Poster Discussion Time
13:30 – 15:15	Parallel Session 4 - Detail schedule separately
15:00 – 15:30	Coffee Break
15:30 – 18:00	Parallel Session 5 - Detail schedule separately
19:00 – 22:00	Galla dinner (Banquet)

Day 3 Schedule (Sunday, September 29th, 2024) –Technical Tour

Time	Program
8:20 – 8:30	Gathering at the entrance hall of the Patra Bali Resort & Villas
8:30 – 10:30	Move to Jatiluwih World Heritage
10:30 – 12:00	At Jatiluwih
12:00 – 13:00	Lunch at Jatiluwih
13:00 – 14:00	Move to Chocolate factory
14:00 – 15:00	At Chocolate factory
15:00 – 17:00	Depart to Jimbaran beach
17:00 – 18:00	Free time
18:00 – 20:00	Technical tour dinner (Jimbaran beach)

Instructions for Session Chairs and Speakers

All PowerPoint presentation slides and posters must be in English.

Chairpersons

Please arrive at the front of the room at least 5 minutes before the session begins. While the chairs will oversee the proceedings, we kindly request your cooperation in helping to keep the sessions on schedule.

Oral Session Presenters

Please submit your presentation file at the PC Desk at least 30 minutes prior to the start of your assigned session. Please note that all presenters are required to submit their presentation files for review. Presentations from personal electronic devices will not be accepted.

Please be sure to be in the “Standby Seat” located in the first row at least 10 minutes prior to your presentation. We appreciate your punctuality in advance. Please note that we will also check the data even if you are using your own laptop due to special reasons (video cannot be played, display is distorted, etc.). Therefore, kindly ensure you visit the PC Desk.
Each presentation is allocated a total of 15 minutes, comprising 10 minutes for the presentation itself and up to 5 minutes for questions and answers.

Presentations will be facilitated using a Windows 10 OS PC provided in each conference room and will be projected onto a single screen.
Windows 10 PC is available at the PC Desk.
Please create your slides in a 16:9 aspect ratio. Please make the file name of your presentation is in the following format: "Presentation ID_full name". (Ex: PT-R18_Taro YAMADA.pptx) Please use the standard font set for Windows OS.

Presentation file submission at the PC Desk

Presenters on Day 1: Friday September 27th, 2024

Please bring your presentation file on a USB memory stick to the PC Desk at least 30 minutes before the start of your session. We kindly encourage you to submit your file early to allow sufficient time for review and to ensure it is displayed as intended

Presenters on Day 2: Saturday September 28th, 2024

If possible, please bring your presentation file on a USB memory stick to the PC Desk after lunch on Friday, September 27th. Submission of presentation files will also be accepted on September 28th.

PC Desk hours: Friday Sep. 27th (8:00 - 15:00) / Saturday Sep. 28th (8:00 - 12:00).

Once your file has been accepted, it will be transferred to our computer, and the USB memory stick will be returned to you. Please note that the data copied onto the computer will be deleted after the presentation is completed.

Video clips in presentations

If your presentation includes videos, please inform the staff at the PC Desk. To ensure that the linked movie file is properly included, please embed the video within the PowerPoint file itself.

Operating the computer during presentations

The computer will be located on the podium. You will be responsible for navigating through the slides yourself throughout your presentation.

Poster Session Presenters

The contents of the posters need to be in English.

Poster format: The poster panel is 180 cm in length × 90 cm in width. JIS-A0 (841 x 1189 mm) size poster is recommended.

Poster set-up & Removal: Poster set-up time: Friday September 27th (Fri) 8:00 - 9:00
Poster removal time: Saturday September 28th (Sat) 15:00 - 16:00
Please note that we will remove posters that have not been removed by 17:00.
The poster number assigned by the Conference Organizer will be displayed in the upper left corner of the panel. Posters should be attached to the panel using pushpins. Pushpins and tape will be available onsite on the day of the event.
Please do not send the posters to the hotel front desk.

Poster viewing & Discussion

Poster viewing will be held between Lunch time on Friday September 27th.
Poster discussion time: September 28th, 2024, 10:55 - 13:25
Odd number: 10:55 – 12:10
Even number: 12:10 – 13:25
*Please remain by your poster during the designated core time.

Call for Paper Submission to Special Issue of EAEF Journal

We are pleased to announce that the papers presented at the ISMAB2024 conference are eligible for submission to a special issue of the journal *Engineering in Agriculture, Environment and Food (EAEF)*. This special issue aims to showcase the latest research and innovations in the fields covered by ISMAB2024, and we invite all participants to submit their papers for consideration.

EAEF is indexed in SCOPUS and is published as an open-access journal on J-STAGE, ensuring wide visibility and accessibility to your research.

Although the Article Processing Charge (APC) for EAEF is typically USD 480, ISMAB will provide financial support, allowing participants to publish their papers for a reduced APC of **USD 200** for papers up to 6 pages. Please note that **this special rate is limited to the first 10 accepted papers**. (The number of papers eligible for financial support may vary slightly depending on the budget.) For papers exceeding 6 pages, additional charges may apply.

Submission Guidelines:
1. All submissions must be original and not under review elsewhere.
2. Papers should be formatted according to the EAEF journal guidelines.
3. The deadline for submission is **January 31, 2025**.
4. When submitting your paper through the submission system of EAEF, please select “Special Issue” as a category of your paper. Also, please include a cover letter stating that your paper was presented at ISMAB2024 and that you wish to have it considered for the special issue.

Please ensure that your manuscript is thoroughly revised and meets the high standards of the journal. All submissions will undergo a peer-review process in accordance with the journal's editorial policies.

For more details on the submission process, please visit the EAEF journal website: [https://www.jstage.jst.go.jp/browse/eaef/-char/en].

We look forward to your contributions to this special issue and thank you for your participation in ISMAB2024.

Scope and Topics of ISMAB2024

BE: Biological Engineering
PM: Farm Power and Machinery
FE: Food Engineering
ET: Structure & Environmental Technology
GT: Green Technology
ST: Sensor Technology
FS: Food Safety
BR: Biomechatronic & Robotics in Agriculture
LE: Livestock Engineering
PT: Postharvest Technology
RE: Bioenergy and Renewable Energy
WM: Waste management
IE: Information & Electronics
GA: General Aspect
DXE: DX, Math & Data Science Education for Agriculture
PA: Precision Agriculture (Smart Agriculture, Data-driven Agriculture)
OET: Other Emerging Technologies

ISMAB2024 Oral Presentation

Presentation Program (September 27th, 2024)
Room 1: The Denpasar Ballroom-1

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Byoung-Kwan Cho (Chungnam National University, Korea)		
13:30 - 13:45	PT-R1	Portable fluorescence spectroscopy equipped with LED-based excitation lamps for authentication of Indonesian stingless bee honey *Diding Suhandy, Kusumiyati Kusumiyati, Dimas Firmanda Al Riza, Mareli Telaumbanua, Meinilwita Yulia, Hirotaka Naito* *The University of Lampung*
13:45 - 14:00	PT-R2	Evaluation of internal and external quality of chestnuts using VIS/NIR spectroscopy and deep learning methods *Gyumin Kim, Sang-Yeon Kim, Sungjay Kim, Xianghui Xin, Harin Jang, Won Choi, Ghiseok Kim* *Seoul National University*
14:00 - 14:15	PT-R3	The potential of fluorescence spectroscopy to assess lignin content in pineapple leaves *Maulidia Hilaili, Takahiro Hayashi, Panintorn Prempree, Bodin Na Jinda, Yuichi Ogawa, Naoshi Kondo* *Kyoto University*
14:15 - 14:30	PT-R4	Laboratory analysis of brix in sugarcane juice from different extraction methods using near-infrared spectroscopy *Akeme C. Njume, Yumika Naomasa, Yoshiaki Shinzato, Eizo Taira* *Kagoshima University*
14:30 - 14:45	PT-R5	Fast discrimination of arabica and robusta green coffee beans by portable fluorescence spectroscopy and chemometrics *Meinilwita Yulia, Slamet Widodo, Analianasari Analianasari, Diding Suhandy, Hirotaka Naito* *Lampung State Polytechnic*
14:45 - 15:00	PT-R6	Injury of bacterial spores treated by high hydrostatic pressure processing and its evaluation of the related substances by FT-NIR *Seishiro Ariyoshi, Mai Eguchi, Satoshi Sekimoto, Daisuke Hamanaka* *Kagoshima University*
15:00 - 15:15		Coffee Break
Chairman: Dr. Diding Suhandy (University of Lampung, Indonesia)		
15:15 - 15:30	PT-R7	Android-based avocado ripeness prediction system: Revolutionizing fruit quality assessment *Gusti Bagus Eka Chandra, I Made Anom S. Wijaya, Ida Bagus Putu Gunadnya* *Udayana University*
15:30 - 15:45	PT-R8	Persimmon disease detection and severity assessment using semantic segmentation analysis *Seokha Hwang, Eungchan Kim, Chang-Hyup Lee, Jiwon Ryu, Seung-Woo Roh, Min-Gyu Baek, Ghiseok Kim* *Seoul National University*
15:45 - 16:00	PT-R9	Detection of foreign material in powdered parsley by pattern analysis in millimeter-wave transmission images *Tetsuhito Suzuki, Kensuke Nakasuka, Ho Jinyama* *Mie University*
16:00 - 16:15	PT-R10	Effects of α-lipoic acid treatment on volatile compounds of fresh-cut fruits and vegetables *Hyuga Minamoto, Takahisa Nishizu, Kohei Nakano, Manasikan Thammawong, Tadasu Teramoto, Teppei Imaizumi* *Gifu University*

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Manasikan Thammawong (Gifu University, Japan)		
16:15 - 16:30	PT-R11	Screening of quality indicator substances in Chinese yams by GCMS-based metabolomics *Tatsuya Koide, Masao Sakurai, Thammawong Manasikan, Masayasu Nagata, Kohei Nakano* *Gifu University*
16:30 - 16:45	PT-R12	Prediction of strawberry ripeness by image and ranking method *Yukihisa Nagaki, Shige Koseki, Kento Koyama* *Hokkaido University*
16:50 - 17:05	PT-R13	Comparative analysis of hyperspectral imaging systems for detecting various external abnormalities in citrus fruits *Seo-Young Kim, Ye-Na Kim, Haeun Kim, Byoung-Kwan Cho* *Chungnam National University*
17:05 - 17:20	PT-R14	Fluorescence indices for estimating water loss in 'Pione' grapes during storage *Panintorn Prempree, Sohta Inoue, Solomon Mehretie, Takahiro Hayashi, Hiroshi Nakashima, Kimiaki Toshikiyo, Motomi Nishimoto, Yuichi Ogawa, Naoshi Kondo* *Kyoto university*
17:20 - 17:35	PT-R15	Feasibility study of time-series spectral image analysis for assessing spinach freshness *Kanon Tsuru, Amani Kahandawa, Hiromichi Itoh, Shinichiro Kuroki* *Kobe University*
17:35 - 17:50	PT-R16	Development of a quantitative analytical method for NAD-related metabolites in harvested fruits and vegetables *Keito Ito, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
17:50 - 18:05	PT-R17	Dynamic changes in bacterial flora diversity due to inter-varietal differences and ultraviolet irradiation during storage of tomato fruit *Risa Kuramoto, Haruka Sameshima, Daisuke Hamanaka* *Kagoshima University*

Presentation Program (September 27th, 2024)
Room 2: The Denpasar Ballroom-2

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Kuo-Chi Liao (National Taiwan University, Taiwan)		
13:30 - 13:45	PM-R1	Comparison of potato cultivation status in the United States and the South Korea *Jeong-Hun Kim, Moon-Kyeong Jang, Yun-Jeong Yang, Ju-Seok Nam* *Kangwon National University*
13:45 - 14:00	PM-R2	Research on double-bedder green onion transplanter *Jun-Yan Liu, Li-Cheng Hsieh* *National Chung Hsing University*
14:00 - 14:15	PM-R3	Developing vehicle work mode and power distribution control algorithm for electric agricultural tractor to maximize field operation time *Seong-Jun Kim, In-Su Kim, Seo-Jung Byeon, Jong-Woo Ha, Jin-Kam Park, Chan-seok Ryu, Jin-Woong Lee* *Korea Institute of Industrial Technology*
14:15 - 14:30	PM-R4	Maximum static friction force prediction model for front-end loaded tractor *Kwang-Mo Kim, Moon-Kyeong Jang, Jeong-Hun Kim, Ju-Seok Nam* *Kangwon National University*

Time	ID No.	Title, Author's name, and First Author's Affiliation
14:30 - 14:45	PM-R5	Driving force control of nonlinear dynamics in agricultural tractor *Masahisa Watanabe, Kenshi Sakai* *Tokyo University of Agriculture and Technology*
14:45 - 15:00	PM-R6	Validation of DEM model for corn threshing through kernel distribution in the threshing chamber of a combine harvester for multi-crops *Nozomi Otsuka, Yasumaru Hirai, Koichiro Fukami, Takashi Okayasu, Kimiyasu Takahashi, Muneshi Mitsuoka* *Kyushu University*
15:00 - 15:15	PM-R7	Preliminary development of labor-saving machinery for taro harvesting *Bo-Jui Chen, Yao-Yu Tsai, Wei Cheng Chen* *National Pingtung University of Science and Technology*
15:15 - 15:30	Coffee Break	
Chairman: Dr. Masahisa Watanabe (Tokyo University of Agriculture and Technology, Japan)		
15:30 - 15:45	PM-R8	Threshing energy efficiency of rice harvested by a head-feeding combine *Yasumaru Hirai, Shotaro Kubo, Saki Tsukida, Takashi Okayasu, Muneshi Mitsuoka* *Kyushu University*
15:45 - 16:00	PM-R9	Analysis of lateral overturning and backward rollover of implemented agricultural tractor *Moon-Kyeong Jang, Yun-Jeong Yang, Kwang-Mo Kim, Ju-Seok Nam* *Kangwon National University*
16:00 - 16:15	PM-R10	Analysis of reaction force of operator's arms when a walking tractor passes through a level-difference *Saki Tsukida, Yasumaru Hirai, Hiroaki Kubodera, Yuya Aoyagi, Takashi Okayasu, Muneshi Mitsuoka* *Kyushu University*
16:15 - 16:30	PM-R11	Application of particle image velocimetry for grain tank of combine harvester during rice discharge *Ango Inoue, Kenji Hiyoshi, Keishiro Nagano, Toshinori Gejima, Taichi Kobayashi* *University of Miyazaki*
16:30 - 16:45	PM-R12	Type determination of agricultural machinery warehouse based on space analysis and farm's using status *Byounggap Kim, Jeongmin Lee* *National Institute of Agricultural Sciences*
16:45 - 17:00	PM-R13	Configuration design and power analysis of 55kw electric tractor powertrain with a planetary gear *Kyeongdae Kim, Wongun Kim, Ganghyun Kim, Siyoung Lee* *Korea Institute of Industrial Technology*
17:00 - 17:15	PM-R14	Agricultural electric vehicles BLDC and PMSM are used for comparison *Yi-Jen Kao, Chia-Hsing Chuang, Huaang-Youh Hurng* *National Chiayi University*

Presentation Program (September 27th, 2024)
Room 3: The Denpasar Ballroom-3

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Michihisa Iida (Kyoto University, Japan)		
13:30 - 13:45	GT-R1	Motion analysis of a robot that performs tasks by running randomly *Tadashi Chosa, Tomoyuki Sasaki, Yuzu Umezaki, Yuki Mizutani* *Tokyo University of Agriculture and Technology*

Time	ID No.	Title, Author's name, and First Author's Affiliation
13:45 - 14:00	GT-R2	Integrating hybrid system of battery and ultracapacitors for electrification agricultural machinery *Yulian Fatkur Rohman, Muhammad Bilhaq Ashlah, Sean Wu-Yang* *National Chung Hsing University*
14:00 - 14:15	GT-R3	Performance of vacuum–fractional distillation reactor to develop crude palm oil as a renewable electrical insulator *Muhamad Mustangin, Bambang Purwantana, Chusnul Hidayat, Radi* *Mechanical Engineering and Technology in Plantation Industry*
14:15 - 14:30	GT-R4	Savonius turbine integrated with triboelectric nanogenerator for wind energy harvester *Yao-Yu Tsai, Wei-Cheng Chen, Yao-Chuan Tsai* *National Chung Hsing University*
14:30 - 14:45	GT-R5	Effect on plant growth in different light conditions under glass and transparent solar panels *Ryosuke Miyata, Seongmin Park, Muneshi Mitsuoka, Yasumaru Hirai, Yukio Ozaki, Takashi Okayasu* *Kyushu University*
14:45 - 15:00	GT-R6	Effectiveness of adding compost material on soil to conserve water on tomato cultivation *Nuril Istiqomah, Idah Andriyani, Sri Wahyuningsih, Ning Puji Lestari* *Jember University*
15:00 - 15:15		Coffee Break
Chairman: Dr. Wei-Chih Lin (National Sun Yat-sen University, Taiwan)		
15:15 - 15:30	BR-R1	Automatic mowing control of electric agricultural machine *Michihisa Iida, Hsiu-Yu Hsu, Haruto Iwata, Kazuyoshi Nonami, Masashi Ishii, Masahiko Suguri* *Kyoto University*
15:30 - 15:45	BR-R2	Approach strategy for achieving high success rate in a tomato harvesting robot *Takuya Fujinaga, Tsuneo Nakanishi* *Osaka Metropolitan University*
15:45 - 16:00	BR-R3	Development of detection of classification system for cherry tomato harvesting robot *Aeron R. Mojica, Sakir Kanmis, Ping-Lang Yen* *National Taiwan University*
16:00 - 16:15	BR-R4	Development of workflow understanding collaborative robot for citrus harvesting *Yoshinari Morio, Mitsuki Shigeoka, Haruna Shimizu, Natsumi Mine, Seiya Yokoe, Takuya Yoshine, Shin Nakashima, Hirotaka Naito* *Mie University*
16:15 - 16:30	BR-R5	AMR navigation for tomato harvesting robot in greenhouse *Huan-Hsuan Peng, Shang-Wei Hsu, Hao-Cheng Zuo, Ping-Lang Yen* *National Taiwan University*
Chairman: Dr. Yoshinari Morio (Mie University, Japan)		
16:35 - 16:50	BR-R6	Preliminary design of oil palm FFB elevator with counting feature to reduce worker workload *Andreas Wahyu Krisdiarto, Eko Aris Budi Cahyono, Teddy Suparyanto, Irya Wisnubhadra* *Instiper Agricultural University*

Time	ID No.	Title, Author's name, and First Author's Affiliation
16:50 - 17:05	BR-R7	Performance comparison between classification and object detection approaches in Cucurbitaceae pests, diseases, and disorder identification *Wen-Fang Yen, Wei-Chun Gao, Yu-Lun Dai, Chu-Ping Lin, Jin-Hsing Huang, Yan-Fu Kuo* *National Taiwan University*
17:05 - 17:20	BR-R8	Improvement of object detection in rice field environment with a fisheye camera for robot combine *Sikai Chen, Michihisa Iida, Jiajun Zhu, Masahiko Suguri, Ryohei Masuda* *Kyoto University*
17:20 - 17:35	BR-R9	Development and integration of small robots with advanced plant sensing systems *Sutan Muhamad Sadam Awal, Koichi Nomura, Masaharu Kitano, Daisuke Yasutake, Takashi Okayasu* *Kochi University*
17:35 - 17:50	BR-R10	Deep learning for monitoring honeybee activity and pollen-bearing behavior *Hsin-Yu Hsieh, Han-Bin Chang, Cheng-Ying Chou* *National Taiwan University*

Presentation Program (September 27th, 2024)
Room 4: The Denpasar Ballroom-4

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Tsuyoshi Okayama (Ibaraki University, Japan)		
13:30 - 13:45	OET-R1	Preliminary study: Image augmentation and CNN for Profenofos detection on red pepper *Zulfa Hana Maulida, I Putu Gede Budisanjaya, I Made Supartha Utama, Chatchawan Chaicana, Wahyu Nurkholis Hadi Syahputra* *Udayana University*
13:45 - 14:00	OET-R2	Deep learning in flavor science: Predicting post-blending sensory attributes in coffee *Chih-Yun Tsai, Yu-Tang Chang, Shu-Ping Hung, Chun-Ming Lu, Chia-Hung Peng, Shih Fang Chen* *National Taiwan University*
14:00 - 14:15	OET-R3	Optimization of bacterial growth *Hsun-Heng Tsai, Wei-Cheng Chen, Yuan-Gang Lee* *National Pingtung University of Science and Technology*
14:15 - 14:30	OET-R4	3D printed soy-based meat as alternative for dysphagia diet: Impacts of hydrocolloids manipulation on physicochemical properties *Thiraphong Aumasa, Yukiharu Ogawa, Masatsugu Tamura* *Chiba University*
14:30 - 14:45	OET-R5	Reducing muscle activation during stoop activities by using grasshopper-leg-inspired back-type exoskeleton in rice farms *Dang Khanh Linh Le, Nhu Tuong An Nguyen, Wei Chih Lin* *National Sun Yat-sen University*
14:45 - 15:00	OET-R6	Optical path analysis and development of portable device for loop-mediated isothermal amplification *Yi-Cheng Hsu, Kuei-Ting Chen* *National Pingtung University of Science and Technology*
15:00 - 15:15		Coffee Break

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Wen-Lin Chu (National Chung Hsing University, Taiwan)		
15:15 - 15:30	WM-R1	The effect of aeration control on energy saving and gas production in the anaerobic process *Isnaeni Nurjanah, Mukhammad Jamaludin, Anisa Fitri Santosa, Sean Wu-Yang* *National Chung Hsing University*
15:30 - 15:45	WM-R2	Development of a commercial kitchen waste treatment machine and its odor-reduction assembles *Li-Cheng Hsieh, Chih-Hsuan Lin, Bo-Chun Fang* *National Chung Hsing University*
15:45 - 16:00	WM-R3	Near infrared spectroscopy analysis for determining the microplastic availability in compost *SDS Piyathissa, Yoichiro Kojima, Yasuhiko Nishijima* *Institute of Livestock and Grassland Science, NARO*
16:00 16:15	WM-R4	Application of ozone fine bubble technology for shrimp pond wastewater treatment *Y. Aris Purwanto, Anto Tri Sugiarto, Wendy Tri Prabowo, Sukenda, Allen Kurniawan, Yudi Chadirin, M Bachtiar, Heru Sukoco, Slamet Widodo* *IPB University*
Chairman: Dr. Ida Bagus Putu Gunadnya (Udayana University, Indonesia)		
16:20 - 16:35	WM-R5	Co-pelleting livestock manure and powdered biochar derived from biomass gasification *Taiyo Hatagami, Kenichi Furuhashi, Yutaka Kaizu, Masaru Mizoguchi* *The University of Tokyo*
16:35 - 16:50	WM-R6	Unheated anaerobic digestion of agricultural residues in greenhouse *Mizuki Hagino, Kenichi Furuhashi, Masaru Mizoguchi, Tetsuya Araki, Yutaka Kaizu* *The University of Tokyo*
16:50 - 17:05	WM-R7	The utilization of fruit waste from religious ceremonies in Bali into fruit leather *I Gusti Agung Bulan Mutiara Dewi, I Gede Arie Mahendra Putra* *Udayana University*
17:05 - 17:20	WM-R8	Changes in microbial communities during cow manure composting under low-temperature environment *Dai Hanajima, Takeki Maeda, Tomo Aoyagi, Tomoyuki Hori* *Hokkaido Agricultural Reserch Center, NARO*

Presentation Program (September 27th, 2024)
Room 5: The Gianyar Room

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Wu-Yang Sean (National Chung Hsing University, Taiwan)		
13:30 - 13:45	PA-R1	Sensor data fusion algorithm of lidar and thermal camera for autonomous spraying robot in orchard *Ailian Jiang, Tofael Ahamed* *University of Tsukuba*
13:45 - 14:00	PA-R2	3D obstacle detection based on LiDAR SLAM for agricultural robots *Depeng Chen, Michihisa Iida, Satoshi Okamoto, Masahiko Suguri, Ryohei Masuda* *Kyoto University*

Time	ID No.	Title, Author's name, and First Author's Affiliation
14:00 - 14:15	PA-R3	The optimal dataset size for improving YOLOV8 performance in agricultural object detection *Jisu Song, Jaesung Park, Dongseok Kim, Eunji Jeong* *Pusan National University*
14:15 - 14:30	PA-R4	Plant management feasibility based on fruit identification using image acquisition cart and precision grading system *Jean Keiko Putri, Shinichi Nagaoka, Hiroshi Nakashima, Takahiro Hayashi, Keiichiro Shiraga, Naoshi Kondo* *Kyoto University*
14:30 - 14:45	PA-R5	CANCELED: Moved to Poster Presentation as No.79 (PA-P12)
14:30 - 14:45	PA-R6	Analysis of travel time in the primary canal of Sapon irrigation system with variations of gate openings *Bondan Satria Pamungkas, Murtiningrum Murtiningrum, Hanggar Ganara Mawandha* *Gadjah Mada University*
15:00 - 15:15		Coffee Break
Chairman: Dr. Naoshi Kondo (Kyoto University, Japan)		
15:15 - 15:30	PA-R7	Deep learning method for analyzing microgreen germination rates over 48 hours *Ping-Yi Chou, Chen-Kang Huang* *National Taiwan University*
15:30 - 15:45	PA-R8	Tomato maturity and yield prediction system based on machine learning and image-processing from smartphone video *Rui-Xiang Zhou, Pin-Rong Lu, Yao-Chuan Tsai* *National Chung Hsing University*
15:45 - 16:00	PA-R9	Machine learning-based image recognition for bagged mango maturity detection *Ying-Ti Weng, Hsiao-Chieh Wang, Yao-Chuan Tsai* *National Chung Hsing University*
16:00 - 16:15	PA-R10	Deep learning applied to pineapple maturity monitoring *Jia-Hao Wang, Ying-Jen Huang, Huaang-Youh Hurng* *National Chiayi University*
Chairman: Dr. Jaesung Park (Pusan National University, Korea)		
16:20 - 16:35	PA-R11	Predicting tomato sap flow rates using machine learning and infrared thermography *Ryo Koyama, Taro Nishimae, Hiroshi Fukuoka, Kenichi Iida, Atsushi Suda* *National Institute of Technology (KOSEN), Nara College*
16:35 - 16:50	PA-R12	Development of tomato ripeness prediction system using deep learning *Ssu-Chi Chen, Ya-Ping Lin, Shih-Fang Chen* *National Taiwan University*
16:50 - 17:05	PA-R13	Using machine vision for the development of muskmelon flower identification model and flower development model *Kai-Chun Liang, Shih-Fang Chen* *National Taiwan University*
17:05 - 17:20	PA-R14	Development of cocoa bean classification system based on computer vision technology and robotic arm *Muhammad Arif Ihsanudin, Radi, Makbul Hajad* *Gadjah Mada University*

Presentation Program (September 28th, 2024)
Room 1: The Denpasar Ballroom-1

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Myongkyoon Yang (Jeonbuk National University, Korea)		
8:30 - 8:45	PA-R15	Development of the sprinkler irrigation system for precise feedback control *Hao-Ting Lin, Zong-Cheng Zou* *National Chung Hsing University*
8:45 - 9:00	PA-R16	Design and development of model for estimating water requirement of pakcoy plant (*Brassica rapa* l.) based on weight sensors *Harmanto, A. Ghani Aziz, R.H. Anasiru, Rahmat dan A. Wicaksono* *Indonesian Polytechnic of Agricultural Engineering (PEPI)*
9:00 - 9:15	PA-R17	Comparative study on potential evapotranspiration using random forest and backpropagation algorithms (A case study in Tungkub irrigation area, Mengwi, Bali) *Luh Made Putri Apriliani, Ni Nyoman Sulastri, I Putu Gede Budisanjaya, I Wayan Widia* *Udayana University*
9:15 - 9:30	PA-R18	Analysis of crop pattern suitability based on irrigation water requirement in Kedungputri irrigation area, Purworejo *Arya Jaya Kusuma, Murtiningrum Murtiningrum, Sigit Supadmo Arif* *Gadjah Mada University*
Chairman: Dr. Cheng-Ying Chou (National Taiwan University, Taiwan)		
9:35 - 9:50	PA-R19	Development of a fuzzy logic-based automatic irrigation system utilizing hybrid moisture and environmental sensors for open field horticulture farming *Andri Prima Nugroho, Astriati Hamidah, Lilik Sutiarso, Sigit Supadmo Arif, Takashi Okayasu* *Gadjah Mada University*
9:50 - 10:05	PA-R20	Design of a control system for physical model automatic gate controllers in open channel surface irrigation *Ardan Wiratmoko, Andri Prima Nugroho, Murtiningrum, Muhammad Farhan Hidayat, Rio Hatta Prayogi, Lilik Sutiarso, Sigit Supadmo Arif, Takashi Okayasu* *Gadjah Mada University*
10:05 - 10:20	PA-R21	Smart control system based on internet of things for dry land agriculture: Real-time monitoring of environmental parameters using sensors *Folkes E. Laumal, Erniati, Hen Umbu Laiya Sobang* *Politeknik Negeri Kupang*
10:20 - 10:35	OET-R7	Affective virtual design for ready-to-drink spices packaging *Duta May Mahendra, Mirwan Ushada, Anggoro Cahyo Sukartiko, Ririn Nur Alfiani* *Gadjah Mada University*
10:35 - 10:50		
10:50 - 13:30		Break & Lunch (Poster Discussion Time)
10:55 - 12:10		Poster Discussion Time (Odd Number)
12:10 - 13:25		Poster Discussion Time (Even Number)

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Suming Chen (National Taiwan University, Taiwan)		
13:30 - 13:45	PA-R22	Exploring the potential and feasibility of a drone-based approach to smart strawberry cultivation management *Tokihiro Fukatsu, Shogo Tsubota, Ken-Ichiro Yasuba, Hiroyuki Okamoto, Sakurako Kurihara, Taku Nakano, Fumihiko Kato* *National Agriculture and Food Research Organization*
13:45 - 14:00	PA-R23	Detection of rice lodging area by using UAV images *Shijing Cheng, Michihisa Iida, Sikai Chen, Jiajun Zhu, Masahiko Suguri, Ryohei Masuda* *Kyoto University*
14:00 - 14:15	PA-R24	Application of GPS-RTK technology in agriculture measurement and positioning *Ren-Horng You, Hsun-Heng Tsai, Wei Cheng Chen, Chen-Che Hong* *National Pingtung University of Science and Technology*
14:15 - 14:30	PA-R25	Research of 3D spatial map on paddy field in south Korea using UAV images *Jinho Won, Dae-Cheol Kim, June-Young Han, In-Seop Jang, Yongjin Cho* *Jeonbuk National University*
14:30 - 14:45	PA-R26	Data-driven agriculture for rice production -Data interoperability between smart rice transplanting and tilling operation- *Eiji Morimoto* *Kobe University*
14:45 - 15:00		
15:00 - 15:30		Coffee Break
Chairman: Dr. Sun-Ok Chung (Chungnam National University, Korea)		
15:30 - 15:45	PA-R27	**CANCELED:** Precise cabbage counting under Korean field condition using deep learning with RGB image *Md Nasim Reza, Sun-Ok Chung, Samsuzzaman, Kyu-Ho Lee* *Chungnam National University*
15:30 - 15:45	PA-R28	Detection of soybean pods using deep learning-based crowd counting network with UAV-RGB imagery *Gyujin Jang, Dong-Wook Kim, Hak-Jin Kim* *Seoul National University*
15:45 - 16:00	PA-R29	Growth quantification for individual sweet peppers in a greenhouse with computer vision *Junyoung Park, Taewon Moon, Tae In Ahn, Soo Chung* *Seoul National University*
16:00 - 16:15	PA-R30	Analysis of various 3D reconstruction algorithms and phenotypic indicator extraction for new pepper cultivar classification *Seong-Hawn Lee, Dokyun Jung, Yeong-Jin Kim, Woojoo Choi, Myongkyoon Yang* *Jeonbuk National University*
16:15 - 16:30	PA-R31	3D modeling and phenotypic analysis of crops for digital twin implementation *Dokyun Jung, Seong-Hawn Lee, Yeong-Jin Kim, Woojoo Choi, Myongkyoon Yang* *Jeonbuk National University*
16:30 - 16:45	PA-R32	Assessment of chlorophyll content based on environmental parameters in different strawberry varieties grown in greenhouses *Junghoo Kook, Seung-Hyun Shin, Sijan Karki, Ogundele Oluwasegun Moses, Hyeon-Tae Kim* *Gyeongsang National University*

Presentation Program (September 28th, 2024)
Room 2: The Denpasar Ballroom-2

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Hak-Jin Kim (Seoul National University, Korea)		
8:30 - 8:45	PA-R33	Integrating deep learning technology to develop chicken eyes early warming system *Jen-Hung Huang, Hsiu-Yun Hu, Ying-Chieh Chen, Hung-Kai Liao, Yao-Chuan Tsai* *National Chung Hsing University*
8:45 - 9:00	PA-R34	Integration of deep learning with panoramic image on mobile vehicle for assessing poultry health status *Chin-Ching Liu, Jen-Hung Huang, Ming-Wen Wu, Hao-Ting Lin, Yao-Chuan Tsai* *National Chung Hsing University*
9:00 - 9:15	PA-R35	Machine learning models for poultry houses: Optimizing conditions to reduce mortality *Suhendra, Hao-Ting Lin, Vincentius Surya Kurnia Adi* *National Chung Hsing University*
9:15 - 9:30	PA-R36	Core AI model integrated by image recognition applied in determining poultry health and potato sprouts *Yu-Tong Jian, Hsin-Chang Chen, Wu-Yang Sean, Kuang-Wen Hsieh* *National Chung Hsing University*
Chairman: Dr. Eiji Morimoto (Kobe University, Japan)		
9:35 - 9:50	PA-R37	Development of a ceiling suspended system for chicken monitoring using deep learning *Kai-Rong Chang, Yan-Fu Kuo* *National Taiwan University*
9:50 - 10:05	PA-R38	Development of an in-situ live fish volume measurement system using Helmholtz resonance *Xianhe Yang, Tomoo Shiigi, Hitoshi Yoshitomi, Akio Watanabe, Yasushi Kohno, Daichi Yobo, Ryosuke Yurugi, Naoshi Kondo* *Kyoto University*
10:05 - 10:20	PA-R39	A real-time individual yak heifer live body weight estimation model base on the YOLOV8 network and body parameter extraction *Yingqi Peng, Zhaoyuan Peng, Yuxiang Yang* *Sichuan Agricultural University*
10:20 - 10:35	PA-R40	Automated identification of defective native Taiwanese chicken using convolutional neural networks *Wen-Liang Chu Wang, Yan-fu Kuo* *National Taiwan University*
10:35 - 10:50	PA-R41	Enhancing secondary metabolites in microgreens through optimized home hydroponic systems *Ping-Yi Chou, Chen-Kang Huang* *National Taiwan University*
10:50 - 13:30		Break & Lunch (Poster Discussion Time)
10:55 - 12:10		Poster Discussion Time (Odd Number)
12:10 - 13:25		Poster Discussion Time (Even Number)

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Hsiao-Mei Wu (National Taiwan University, Taiwan)		
13:30 - 13:45	PA-R42	Deep learning-based detection of seedling weeds at different growth stages *Harin Jang, Sang-Yeon Kim, Chang-Hyup Lee, Seung-woo Roh, Gyumin Kim, Ghiseok Kim* *Seoul National University*
13:45 - 14:00	PA-R43	Application of deep learning techniques in laser weed control modules *Jia-Gong Gu, Yu-Kai Weng, Yao-Chuan Tsai* *National Chung Hsing University*
14:00 - 14:15	PA-R44	Soil phosphorus mapping for precision fertilization on paddy fields in South Korea *June-Young Han, Dae-Cheol Kim, Jinho Won, In-Seop Jang, Woo-Jae Cho, Yongjin Cho* *Jeonbuk National University*
14:15 - 14:30	PA-R45	Robust modeling of soil properties estimation using diffuse reflectance spectroscopy *In-Seop Jang, Dae-Cheol Kim, Jinho Won, June-Young Han, Yongjin Cho* *Jeonbuk National University*
14:30 - 14:45	PA-R46	Sooty mold detection on citrus tree canopy using various YOLO-based deep learning models *Bryan Apacionado, Tofael Ahamed* *University of Tsukuba*
14:45 - 15:00	PA-R47	Virtual plant doctor: Deep learning approaches for vegetable crop disease identification in urban agriculture *Chiao-Chi Hsu, Ting-Ting Li, Shih-Fang Chen* *National Taiwan University*
15:00 - 15:30		Coffee Break
Chairman: Dr. Takashi Okayasu (Kyushu University, Japan)		
15:30 - 15:45	PA-R48	Development of a small-scale household cultivation platform with ventilation and precision light control *Jung-Sun Gloria Kim, Siun Lee, Sehyun Jeon, Jungseung Bae, Soo Chung* *Seoul National University*
15:45 - 16:00	PA-R49	Development of an intelligent cart used in horticulture and verification of its validity *Hyuga Shinkai, Masafumi Horimoto, Yasumaru Hirai, Muneshi Mitsuoka, Takashi Okayasu* *Kyushu University*
16:00 - 16:15	PA-R50	Updating deep-learning segmentation for paprika-yield prediction in large-scale greenhouses *Nozomu Ohta, Kota Shimomoto, Mitsuyoshi Shimazu, Tokihiro Fukatsu* *Institute of Agricultural Machinery, NARO*
16:15 - 16:30	PA-R51	Analysis of data collection cycle for carbon dioxide control in strawberry greenhouse *Seung Hyun Shin, Junghoo Kook, Sijan Karki, Ogundele Oluwasegun Moses, Hyeon-Tae Kim* *Gyeongsang National University*
16:30 - 16:45	PA-R52	Evapotranspiration rate monitoring of tomatoes in hydroponic greenhouse for precision irrigation *Sung Kwon Park, Min-Seok Gang, Sanghyun Lee, Hak-Jin Kim* *Seoul National University*

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Teppei Imaizumi (Gifu University, Japan)		
16:50 - 17:05	PA-R53	Longitudinal characterization of fluorescence properties in the wax on avocado skin during maturation using excitation emission matrix *Tianqi Gao, Yoshito Saito, Makoto Kuramoto, Miao Zhang, Atsuhiro Yamamoto, Shintaro Hashiguchi, Tetsuhito Suzuki, Naoshi Kondo* *Kyoto University*
17:05 - 17:20	PA-R54	Reconstruction of 3D plant model with the fusion of RGB and fluorescence imaging system *Jiun-Wei Yi, Cheng-Hao Lin, Hsiao-Mei Wu* *National Taiwan University*
17:20 - 17:35	PA-R55	Detection of water stress in tomato leaves using frequency-domain chlorophyll fluorescence lifetime imaging system *Cheng-Hao Lin, Jiun-Wei Yi, Hsiao-Mei Wu* *National Taiwan University*

Presentation Program (September 28th, 2024)
Room 3: The Denpasar Ballroom-3

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Tadashi Chosa (Tokyo University of Agriculture and Technology, Japan)		
8:30 - 8:45	BR-R11	Adaptive target following autonomous electric vehicle based on transfer learning technology *Guan-Hua Chen, Hao-Ting Lin, Yao-Chuan Tsai* *National Chung Hsing University*
8:45 - 9:00	BR-R12	Development of parking system for recharging system of an agricultural electric vehicle *Hsiu-Yu Hsu, Michihisa Iida, Haruto Iwata, Masashi Ishii, Kazuyoshi Nonami, Masahiko Suguri* *Kyoto University*
9:00 - 9:15	BR-R13	Mobile robot poultry house automatic docking and charging system based on camera and lidar sensor *Akhmad Azhar Firdaus, Chiao Yin Tu, Sean Wu-Yang* *National Chung Hsing University*
9:15 - 9:30	BR-R14	Analysis of characteristics for E-powertrain of 55-kW tractor using agricultural workload data *Seung-Min Baek, Yong-Joo Kim* *Chungnam National University*
Chairman: Dr. Kenichi Iida (National Institute of Technology, Nara College, Japan)		
9:35 - 9:50	BR-R15	A pig foot detection and tracking approach for gait evaluation *Cheng-En Chiang, Hsiao-Han Huang, En-Chung Lin, Yan-Fu Kuo* *National Taiwan University*
9:50 - 10:05	BR-R16	A study on weed mapping and robotic weeding operations in organic spinach farming *Yuichi Kobayashi, Yasunari Miyake, Masayuki Kogoshi* *National Agriculture and Food Research Organization*
10:05 - 10:20	BR-R17	Yaw rate feedback-based tracking of curved path on sloping ground *Jungun Lee,Yong-Hyun Kim,Chulwhan Yoon, Hak-Jin Kim* *Seoul National University*
10:20 - 10:35	BR-R18	Development of the small robot management system using a network camera *Nguyen Van Dieu, Tadashi Chosa* *Tokyo University of Agriculture and Technology*

Time	ID No.	Title, Author's name, and First Author's Affiliation
10:35 - 10:50	BR-R19	Wood species identification using deep learning and line bot *Pei-Chi Yang, Chin-Mei Lee, Yan-Fu Kuo* *National Taiwan University*
10:50 - 13:30		Break & Lunch (Poster Discussion Time)
10:55 - 12:10		Poster Discussion Time (Odd Number)
12:10 - 13:25		Poster Discussion Time (Even Number)
Chairman: Dr. Chung-Liang Chang (National Pingtung University of Science and Technology, Taiwan)		
13:30 - 13:45	BR-R20	Development of a rail-guided vehicle and platform for monitoring multiple planting rows in greenhouses *Kota Shimomoto, Mitsuyoshi Shimazu, Hiroki Naito, Tokihiro Fukatsu* *Institute of Agricultural Machinery, NARO*
13:45 - 14:00	BR-R21	Selection and evaluation of spray nozzle for pollination robot *Zaifei Jiang, Takashi Okayasu, Muhammad Rashed Al Mamun, Yasumaru Hirai, Muneshi Mitsuoka* *Kyushu University*
14:00 - 14:15	BR-R22	An automated spraying robot for cultivating papaya in greenhouses *Nhu Tuong An Nguyen, Dang Khanh Linh Le, Wei-Chih Lin* *National Sun Yat-sen University*
14:15 - 14:30	BR-R23	Force control strategy for a tomato pruning task by a manipulator equipped with a hedge trimmer *Masakazu Kashino, Tokihiro Fukatsu, Nozomu Ohta, Hideto Kurosaki* *National Agriculture and Food Research Organization*
14:30 - 14:45	BR-R24	Development and performance evaluation of rotational cutting mechanism on end-effector for tomato de-leafing *Tomoaki Kaneko, Tokihiro Fukatsu, Hiroshi Yamaura, Hideharu Takahashi* *Tokyo Tech*
14:45 - 15:00	BR-R25	Development of multi-purpose trolley for greenhouse cultivation *Kazuya Fujimoto, Masahiro Ohtani, Hiroshi Fukuoka, Kenichi Iida* *National Institute of Technology (KOSEN), Nara College*
15:00 - 15:15	BR-R26	Implementation of the precise Pneumatic Servo control system for vegetable seeding in plug trays *Hao-Ting Lin* *National Chung Hsing University*
15:15 - 15:30		Coffee Break
Chairman: Dr. Kyoung-Je Jang (Gyeongsang National University, Korea)		
15:30 - 15:45	BE-R1	Enhancing material decomposition in CT imaging via deep learning on simulated dual-layer spectral CT data *Shaghayegh Afshari, Cheng-Ying Chou* *National Taiwan University*
15:45 - 16:00	BE-R2	A laser projection system integrated deep learning technology for promoting chicken flock movement *Rih-Hua Shen, Chia-Wei Su, Chun-Chen Huang, Yao-Chuan Tsai* *National Chung Hsing University*
16:00 - 16:15	BE-R3	The impact of ultrasonic cavitation on skin cleansing and irritation *Hong-Ye, Chou, Hui-Chuan, Hung, Huaang-Youh, Hurng* *National Chiayi University*

Presentation Program (September 28th, 2024)
Room 4: The Denpasar Ballroom-4

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Hsun-Heng Tsai (National Pingtung University of Science and Technology, Taiwan)		
8:30 - 8:45	ST-R1	Comparative study of spectrometer sensors for corn moisture content prediction based on corn husk *Harki Himawan, Muhammad Dzakky Alghifari, Moch. Bagus Hermanto, Sandra, Nazmi Mat Nawi, Ken Abamba Omwange, and Dimas Firmanda Al Riza* *Brawijaya University*
8:45 - 9:00	ST-R2	Early detection multi-stress conditions in lettuce using time-series hyperspectral image with deep learning *Min-Gyu Baek, Eung chan Kim, Sungjay Kim, JiWon Ryu, Xianghui Xin, Subin Lee, Ghiseok Kim* *Seoul National University*
9:00 - 9:15	ST-R3	Cross calibration of soil comprehensive sensor RS485 with wet sensor and Takemura DM-5 in Bogor *Budi Priyonggo, Muhammad Hafidz, Jati Nucholis, Muharfiza* *Politeknik Enjiniring Pertanian Indonesia*
9:15 - 9:30	ST-R4	Honey adulteration detection using reflectance-fluorescence spectroscopy and machine learning *Rach Ayyu Zanierey Aisyah Yahya, Sucipto, Dimas Firmanda Al Riza* *Brawijaya University*
Chairman: Dr. Mizuki Tsuta (Institute of Food Research, NARO, Japan)		
9:35 - 9:50	ST-R5	Evaluation of automatic irrigation system implementation for rice cultivation *Nova Anika, Lukman Wijaya, Ridwan* *Institut Teknologi Sumatera*
9:50 - 10:05	ST-R6	**CANCELED:** Wheat feature characterization using lidar sensing technique *Md Rejaul Karim, Sun-Ok Chung, Shahriar Ahmed, Md Nasim Reza, Mohammod Ali, Joonjea Sung* *Chungnam National University*
9:50 - 10:05	ST-R7	Rapid analysis of total phenolic and flavonoid content in Purwoceng (*Pimpinella pruatjan* Molk.) leaf powder using portable UV-induced fluorimeter *Slamet Widodo, Shahfaturrahman Fatahilah, Sutrisno, Irmanida Batubara, Eni Sumarni, Herry Suhardiyanto, Mohamad Solahudin, Supriyanto, Eti Rohaeti, Yudiwanti Wahyu* *IPB University*
10:05 - 10:20	ST-R8	Evaluation of weed growth in various vegetation types by 3-D point cloud *Jaehwan Lee, Eiji Morimoto, Mayu Ota, Nguyen Van Dieu, Tadashi Chosa* *Kobe University*
10:20 - 10:50		
10:50 - 13:30		Break & Lunch (Poster Discussion Time)
10:55 - 12:10		Poster Discussion Time (Odd Number)
12:10 - 13:25		Poster Discussion Time (Even Number)

Time	ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Daisuke Hamanaka (Kagoshima University, Japan)		
13:30 - 13:45	IE-R1	Comparison of Raman probe spectroscopy and near infrared differential reflectance spectroscopy for direct ethanol fermentation monitoring system of sake mash *Hirotaka Naito, Atsushi Wada, Hironori Maruyama, Yoshinari Morio* *Mie University*
13:45 - 14:00	IE-R2	Oral cancer detection: Deep learning-based automated diagnosis and mobile application for early-stage detection *Chao-Hung Jeng, Jun-Kai Liao, Shyh-Jye Chen, Yu-Cheng Huang, Yu Hsu, Jang-Jaer Lee, Jun-Ching Lee, Cheng-Ying Chou* *National Taiwan University*
14:00 - 14:15	IE-R3	Machine learning-based sweet basil stress classification using non-destructive bioelectrical impedance equivalent circuit parameters *Daesik Son, Junyoung Park, Siun Lee, Sehyeon Jeon, Soo Chung* *Seoul National University*
14:15 - 14:30	FS-R1	Portable lamp-based DNA detection of *Assini corii* colla with smartphone integration *Chung Yu Huang, Jyh Jian Chen* *National Pingtung University of Science and Technology*
14:30 - 14:45	FS-R2	Development of technology for early detection of mold growth based on millimeter wave dielectric sensor *Koki Iwasaki, Yoshihisa Yamashige, Siyao Chen, Akihiro Yasuhara, Keiichiro Shiraga, Naoshi Kondo, Yuichi Ogawa* *Kyoto University*
14:45 - 15:00	FS-R3	Rapid microbial detection technique using near-field dielectric sensor and membrane filter *Yoshihisa Yamashige, Siyao Chen, Shojiro Kikuchi, Takashi Kawano, Yuichi Ogawa* *Kyoto University*
15:00 - 15:15	GA-R1	Effect of fine bubble water application on the growth of tomato seedlings in nursery stage *Indrawan Cahyo Adilaksono, Agus Dana Permana, Mia Rosmiati, Rizki Fauziah Ramadhaini, Chindy Ulima Zanetta* *Institut Teknologi Bandung*
15:15 - 15:30		Coffee Break
Chairman: Dr. Yan-Fu Kuo (National Taiwan University, Taiwan)		
15:30 - 15:45	LE-R1	Method for estimating actual body weight based on depth images of dairy cow rumps *Qun-Wei Chang, Chu-Wun Peng, Wen-Lin Chu, Hsin-I Chiang, Hsiao-Ping Tsai* *National Chung Hsing University*
15:45 - 16:00	LE-R2	Infrared thermal imaging module for dairy cow heat stress prediction based on deep learning technology *Po-Chih Chuang, Rui-Xiang Zhou, Yao-Chuan Tsai* *National Chung Hsing University*
16:00 - 16:15	LE-R3	Applying the LSTM approach to predict the water consumption of red-feathered Taiwan country chickens *Fu-Pang Shih, Yao-Chuan Tsai, Kuang-Wen Hsieh* *National Chung Hsing University*

Time			ID No.	Title, Author's name, and First Author's Affiliation
16:15	-	16:30	LE-R4	Influence of composting conditions in closed vertical composting facilities on the micro-flora of compost *Yoichiro Kojima, Hiroshi Yokoyama, Ryoh Nakakubo, Sudeshinie Piyathissa, Akifumi Ogino, Yasuhiko Nishijima, Mitsuyoshi Ishida, Akihiro Tanaka, Kiyoshi Tajima* *Institute of Livestock and Grassland Science, NARO*
16:30	-	16:45	LE-R5	An efficient AIOT framework for image-based behavior monitoring in dairy calves *Po-Lin Chen, Rui-Yuan Liao, Jih-Tay Hsu, Ta-Te Lin* *National Taiwan University*
16:45	-	17:00	LE-R6	Detection of stall usage rate and assessment of cattle welfare based on deep learning techniques *Hong-Yi Li, Zi-Heng Jian, Jing-Jie Meng, Ze-Min Chen, Xin-Yi Jiang, Yao-Chuan Tsai* *National Chung Hsing University*

Presentation Program (September 28th, 2024)
Room 5: The Gianyar Room

Time			ID No.	Title, Author's name, and First Author's Affiliation
Chairman: Dr. Takashi Fukushima (Mie University, Japan)				
8:30	-	8:45	RE-R1	Wind-driven triboelectric generator integrated cotton structures for enhanced power generation efficiency *Yen-Hao Chiu, Yao-Chuan Tsai* *National Chung Hsing University*
8:45	-	9:00	RE-R2	Milking of hydrocarbon from microalgae for biofuel production by two-phase culture *Takaya MIyazaki, Kenichi Furuhashi, Yutaka Kaizu* *The University of Tokyo*
9:00	-	9:15	RE-R3	Off-grid smart agriculture with PV power generation CROAS_ZERO new tracking mechanism *Takaaki Uehara, Hideharu Takahashi, Masahiro Terada, Atsushi Kurita, Kazuhiko Aiga, Tadashi Kawamoto* *Tokyo Institute of Technology*
9:15	-	9:30	RE-R4	Simultaneous production of biogas and high nitrogen concentration liquid fertilizer from anaerobic digestion *Kenichi Furuhashi, Tatsuki Hamanaka, Yutaka Kaizu, Kenji Imou* *The University of Tokyo*
Chairman: Dr. Shinichiro Kuroki (Kobe University, Japan)				
9:35	-	9:50	FE-R1	Relationship between the elongation effect of actin fibers by millimeter-wave irradiation and irradiation intensity *Akihiro Yasuhara, Yuusuke Yamaguchi, Keiichiro Shiraga, Yuuichi Ogawa, Naoshi Kondo* *Kyoto University*
9:50	-	10:05	FE-R2	Changes in antioxidant activity and electrical impedance of eggplant pickles (Nukazuke) during pickling process *Haruna Kamo, Yukiharu Ogawa* *Chiba University*

Time			ID No.	Title, Author's name, and First Author's Affiliation
10:05	-	10:20	FE-R3	Determining the amylose content in starchy plants by using FT-THZ spectroscopy *Jungbin Kim, Han Guo, Naoshi Kondo, Keiichiro Shiraga* *Kyoto University*
10:20	-	10:35	FE-R4	Effects of alpha-lipoic acid treatment on quality retention and electrical properties of fresh-cut avocados *Li Wenchao, Takahisa Nishizu, Takashi Watanabe, Tadasu Teramoto, Teppei Imaizumi* *Gifu University*
10:35	-	10:50	FE-R5	Estimation of water content and antioxidant activity in enoki treated with edible coating *Kusumiyati Kusumiyati, Mochamad Arief Soleh, Bambang Nurhadi* *Padjadjaran University*
10:50 - 13:30				Break & Lunch (Poster Discussion Time)
10:55 - 12:10				Poster Discussion Time (Odd Number)
12:10 - 13:25				Poster Discussion Time (Even Number)
Chairman: Dr. Yi-Chich Chiu (National Ilan University, Taiwan)				
13:30	-	13:45	PM-R15	Safety analysis of the mulching and soil covering machine *Inseok Hwang, Wantae Im, Yejin Park, Yeonju Lee, Sungmin Ji, Changseop Shin* *Chungbuk National University*
13:45	-	14:00	PM-R16	3D dynamic simulation model to characterize tractor's overturning and rollover *Yun-Jeong Yang, Moon-Kyeong Jang, Kwang-Mo Kim, Ju-Seok Nam* *Kangwon National University*
14:00	-	14:15	PM-R17	MLP-based parameter optimization of four clutch simultaneous shifting control algorithms for agricultural tractor power-shift transmission *Insu Kim, Seong-Jun Kim, Jin-Kam Park, Woojae Cho, Jin-Woong Lee* *Korea Institute of Industrial Technology*
14:15	-	14:30	PM-R18	**CANCELED:** Field evaluation of mechanized cabbage cultivation models *Md Nasim Reza, Sun-Ok Chung, Kyu-Ho Lee, Md Razob Ali, Emmanuel Bicamumakuba* *Chungnam National University*
14:30	-	14:45	PM-R19	**CANCELED:** Operating speed and power analysis of a 2-kW motor-driven semi-automatic cabbage transplanter for biodegradable seedling pots *Md Razob Ali, Sun-Ok Chung, Mohammod Ali, Kyu-Ho Lee, Beom-Sun Kang* *Chungnam National University*
14:15	-	14:30	PM-R20	Virtual engineering of computer assisted operation for front loaders *Kaito Sonoda, Kaito Mine, Tsuneo Nakanishi, Takuya Fujinaga* *Avinton Japan K.K.*
14:30	-	14:45	PM-R21	Performance evaluation of the traction control model for 100-kW electric tractor with all-wheel independent driving e-axle system based on model-in-the-loop simulation *Seung-Yun Baek, Seung-Min Baek, Yong-Joo Kim* *Chungnam National University*

ISMAB2024 Poster Presentation

Poster Discussion Time: September 28th, 2024, 10:55 - 13:25

Odd number: 10:55 – 12:10

Even number: 12:10 – 13:25

****Please make a presentation in front of your poster as much as possible during the discussion time****

No.	Poster ID	Title, Author's name, and First Author's Affiliation
1	BE-P1	Effect of ultrafine bubbles priming on seed germination of pennyroyal mint under drought conditions *Thuy Linh Ha, Masatoshi Yoshimura, Itaru Sotome* *The University of Tokyo*
2	BE-P2	Laser stimulation chicken flock response evaluate system based on deep learning technology *Chun-Chen Huang, Ying-Chieh Chen, Chia-Wei Su, Kuang-Wen Hsieh, Yao-Chuan Tsai* *National Chung Hsing University*
3	BE-P3	The impact of horticultural therapy on elderly patients healths *Jun-Shen Shi, Yu-Min Li, Bo-Lin Jian, Wen-Lin Chu* *National Chin-Yi University of Technology*
4	BE-P4	Light quality effect red romaine baby leaf content Fe, Mg, Ca, Vit.C, NO3, SPAD value, stomatal conductance, and fresh weight in PFAL *Chi-Hui Chen, Yi-Chich Chiu, Chen-Kang Huang, Hsing-Ying Chung, Wei Fang* *National Taiwan University*
5	BE-P5	Exploring bio-material applications of chitosan-PEG conjugates *Yeonggeol Hong, Sangbae Park, Kyoung-Je Jang* *Gyeongsang National University*
6	BE-P6	Modeling the prediction of poultry house temperature changes using deep learning neural networks *Tzu-Ti Lee, Zhi-Xuan Dai* *National Chung Hsing University*
7	BE-P7	Design and development of a STM32-based control architecture for electrified agricultural cultivator *Tejal Gadad, Cheng-Yen Li, Shun-Yan Lu, Ping-Lang Yen* *Vishwakarma Institute of Technology*
8	BR-P1	Development of kimchi cabbage and onion robot object detection model based on YOLO *Seongmi Sun, Gangho Seon, Joonmo Kang, Huimin Shin, Sieun Han, Gwanghyeon Jeon, Seonil Kim, Kiteag Lee, Hyuckjoo Kim* *Sunchon National University*
9	BR-P2	Development of an intelligent watering truck for orchid gardens *Yu-Ju,Wei, Chao-Wang,Young* *National Chiayi University*
10	BR-P3	Design and implementation of an AI-driven strawberry picking robotic platform for hydroponic greenhouses *Chung-Liang Chang, Cheng-Chieh Huang, Rui-Yi Xu* *National Pingtung University of Science and Technology*
11	BR-P4	Developments and validations of smart rotifer aquaculture system *Po-Jen Lu, Wen-Wei Chang, Lu-Chan Liu, Ting-Chuan Huang, Kuo-Chi Liao* *National Taiwan University*

No.	Poster ID	Title, Author's name, and First Author's Affiliation
12	BR-P5	A study on intelligent random path planning for autonomous vehicles in orchards cooperative operations *Chien-Ying Yang, Yu-Cheng Hsu, Tse-Min Chen* *National Chung Hsing University*
13	BR-P6	Automatic digging depth control of tractor-mounted potato harvester using reinforcement learning model *Daehyun Kim, Jung-sang Yoo, JoongYong Rhee* *Seoul National University*
14	BR-P7	Smart robotics system for chicken egg detection and collection *Hao-Ting Lin, Bobby Aguilar Gonzales* *National Chung Hsing University*
15	BR-P8	Development of an automated harvester for multiple types of organic sprouts *Po-Shao Chen, Jen-Yu Lien, Cheng-Ying Chou* *National Taiwan University*
16	BR-P9	Study of robot driving recognition sensors to ensure worker safety in greenhouse *Kyoung-chul Kim, Man-jung Kim, Changju Yang, Youngki Hong* *National Institute of Agricultural Sciences (Jeonju, Korea)*
17	ET-P1	The effect of heat aging and ultraviolet radiation aging on the properties of plastic films used in greenhouses *Cheng-Chang Lien, He Wen, Jun-Han Mei* *National Chiayi University*
18	ET-P2	Study on the simulation analysis of torsional performance of spring wire clamps with cross connector for pipe greenhouses *Cheng-Chang Lien, Hong-Zheng Zhang, Jun-Han Mei* *National Chiayi University*
19	FE-P1	Effects of vacuum microwave drying on aroma and structural characteristics of crickets *Miyu Inoue, Takahisa Nishizu, Kohei Nakano, Teppei Imaizumi* *Gifu University*
20	FE-P2	Effects of blanching treatments on ice crystal structures of frozen potatoes *Hinata Fukao, Takahisa Nishizu, Kohei Nakano, Teppei Imaizumi* *Gifu University*
21	FE-P3	Evaluation of mechanical properties of carrot cell walls modified by heat treatments *Masako Wada, Akira Umehara, Takahisa Nishizu, Teppei Imaizumi* *Gifu University*
22	GA-P1	Analysis of water losses factors to determine irrigation efficiency in Kedungputri irrigation system, Purworejo *Dalfa Zahra, Murtiningrum, Hanggar Mawandha* *Gadjah Mada University*
23	IE-P1	Enhancing microbial species identification through deep learning for metagenomics applications *Ming-Ju Yang, Chien-Yu Chen* *National Taiwan University*
24	IE-P2	Identifying targets of microRNA by deep learning *Zong-Yan Liu, Hsin-Hsiang Mao, Chien-Yu Chen* *National Taiwan University*
25	IE-P3	Disease detection of pepper based on multispectral images mounted on UAV *GangIn Je, ChangHyeok Park, JongChan Jeong, Chanseok Ryu* *Gyeongsang National University*
26	LE-P1	Poultry disease consultation and management evaluation system *Jia-Siang Chen, Wen-Lin Chu* *National Chin-Yi University of Technology*

No.	Poster ID	Title, Author's name, and First Author's Affiliation
27	LE-P2	Development of poultry vocal monitoring system for heat stress and disturbance behavior analysis *Li-Yun Huang, Jun-Qian Zhu, Yao-Chuan Tsai* *National Chung Hsing University*
28	LE-P3	Determination of goat behaviors using vibration time series data from inertial sensor *Tadafumi Sugi, Muneshi Mitsuoka, Kazuyuki Namihira, Takeshi Eto, Yuya Aoyagi, Eizo Taira* *University of the Ryukyus*
29	LE-P4	A dairy cow visual recognition system based on YOLOX *Jun-Ye Luo, Hong-Yi Xie, Wen-Lin Chu, Hsin-I Chiang, Hsiao-Ping Tsai* *National Chung-Hsing University*
30	OET-P1	High-voltage electrostatic field: A new technique to replace phosphate in emulsified meat products *Hui Zhen Yan, Wei Cheng Chen, Fu Yuan Cheng* *National Pingtung University of Science and Technology*
31	OET-P2	A 3D realistic strawberry plant model for phenotyping based on the point cloud data *Tsuyoshi Okayama, Tsuneyo Sekido, Masaki Mitsuyoshi, Yuya Mochizuki* *Ibaraki University*
32	PA-P1	Applying depth imaging and machine learning to estimate goose weight *Yu-Ming Su, Kuang-Wen Hsieh* *National Chung Hsing University*
33	PA-P2	Bio-speckle analysis to evaluate stress response focusing on plant leaf dynamics *Shogo Mitsumura, Kenji Takisawa, Takashi Fukushima* *Mie University*
34	PA-P3	Deep learning technology integrated with controllable camera for chicken abnormal comb detection *Ming-Wen Wu, Hsiu-Yun Hu, Kuang-Wen Hsieh, Yao-Chuan Tsai* *National Chung Hsing University*
35	PA-P4	Development and comparative study on the methods of evaluating turkey activity through visible light fisheye imaging *Bing-Heng Zhong, Yi-Tsung Kuo, Yao-Chuan Tsai, Tse-Min Chen* *National Chung Hsing University*
36	PA-P5	Measurement accuracy of CAN data acquired from tractors and correlation analysis under operating conditions *Keita Ono, Koichiro Fukami, Senlin Guan, Kimiyasu Takahashi* *Kyushu Okinawa Agricultural Research Center, NARO*
37	PA-P6	Seed counting with density estimation based on deep-learning for performance evaluation of drone seeding *Baek-Gyeom Seong, Soo-Hyun Cho, Seung-Hwa Yu, Chun-Gu Lee, Yeongho Kang, Dae-Hyun Lee* *Chungnam National University*
38	PA-P7	Predicting lettuce growth in greenhouses using large language model-based time series analysis *Sanghyeok Choi, Sangchun Bark, Kyuseok Yang, Woosang Jeon, Taehyeong Kim* *Seoul National University*
39	PA-P8	Intelligent asparagus growth management system: Spear height prediction *Ci-Ruel Bai, Ting-Jui Huang, Shih-Fang Chen* *National Taiwan University*
40	PA-P9	Pest monitoring system: an application of IoT and deep learning *Jen-Yu Lian, Po-Shao Chen, Cheng-Ying Chou* *National Taiwan University*

No.	Poster ID	Title, Author's name, and First Author's Affiliation
41	PA-P10	Deep learning-based multispectral image reconstruction using RGB images *Yeong-Jin Kim, Seong-Hawn Lee, Dokyun Jung, Woojoo Choi, Myongkyoon Yang* *Jeonbuk National University*
42	PA-P11	UAV-based soil surface roughness measurement on point cloud level by roughness index calculation *Eunji Jeong, Jaesung Park, Dongseok Kim, Jisu Song* *Pusan National University*
43	PM-P1	Effect of hardness grade of NR, SBR and NR/SBR rubber on mechanical behavior of circular-shaped fenders *Chiou, Yung-Chuan* *National Chiayi University*
44	PM-P2	Study on the impact shearing characteristics of Pennisetum stems by serrated blades *Cheng-Chang Lien, Zong-Yuan Cai, Jun-Han Mei, Jeng-Liang Lin* *National Chiayi University*
45	PM-P3	Ridge-forming dry direct seeding technology that allows direct sowing of paddy rice even after rainfall *Koichiro Fukami, Kimiyasu Takahashi, Keiko Nakano, Naoki Matsuo, Keita Ono* *Kyushu Okinawa Agricultural Research Center*
46	PM-P4	Analysis of power requirement for the attachments of 48HP class agricultural tractor based on soil conditions in Indonesia *Seung-Je Cho, Sang-Dae Lee, Jeong-Gil Kim, Kyu-Jeong Choi, Dong-Seok Park, Hyun-Gi Kim* *Korea Institute of Industrial Technology*
47	PM-P5	Analysis of opacity emissions testing for tractor exhaust gas in Taiwan during 2022~2023 *Yi-Chich Chiu, Yn-Jen Chiou, Chi-Hui Chen, Xin-Ru Lin* *Taiwan Agricultural Mechanization Research and Development Center*
48	PM-P6	Automated counting and conveying system applied in *Pachira aquatica* *Meng-Ru Lin, Tsung-Chia Chen, Chia-Chin Hsu, Wen-Lin Chu* *National Chin-Yi University of Technology*
49	PM-P7	Theoretical verification of tractor attitude angle control system using modern control theory on uneven sloping roads *Kyo Mishima, Yuya Aoyagi, Takeshi Shikanai* *University of the Ryukyus*
50	PT-P1	Data mining of factors inhibiting drip loss in cherry tomatoes after freezing and thawing *Yuma Sano, Shoji Koide, Takahiro Orikasa, Sadao Komori* *Iwate University*
51	PT-P2	Effects of supercooled storage at -5 ℃ on quality and sensory evaluation of watercored fresh-cut apples *Renna Takimura, Arisa Sato, Takahiro Orikasa, Shoji Koide* *Iwate University*
52	PT-P3	Ultrasound treatment to delay the ripening of mature green bananas *Atsuyo Nakano, Shiho Usami, Kasumi Nakagawa, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
53	PT-P4	Development of freshness evaluation method for fruits and vegetables based on NAD metabolism *Hitomi Hattori, Keito Ito, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
54	PT-P5	Influence of temperature-shifting treatment on metabolites in sweet potatoes *Seiya Kato, Manasikan Thammawong, Daisuke Hamanaka, Masayasu Nagata, Kohei Nakano* *Gifu University*

No.	Poster ID	Title, Author's name, and First Author's Affiliation
55	PT-P6	Monitoring device validity in evaluating transport load for individual fruit in packing box *Takashi Fukushima, Shunya Kanaoka, Haruhiro Imai, Masahiro Katagiri, Kazuaki Doi, Yuta Fukasawa, Kenji Takisawa* *Mie university*
56	PT-P7	Packaging coating based on polysaccharide grafted with chlorogenic acid: preparation, characterization and application in food perseveration *Dahai Jiang, Liming Lu, Jianchun Jiang, Yukiharu Ogawa* *Huaqiao University*
57	PT-P8	Effect of controlled atmosphere storage on quality change and clock gene expression in banana *Mako Ono, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
58	PT-P9	Basic study on a calibration model for sucrose content in sugarcane juice using FT-IR *Miki Horie, Riku Kouchi, Yuya Ishimine, Tetsu Shirakawa, Eizo Taira* *Kagoshima University*
59	PT-P10	Characteristics of clock gene expression associated to cutting manipulation in soybean sprouts *Mai Sato, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
60	PT-P11	Effect of ultrasound treatment on expression of cell wall modifying genes in banana *Mahiro Yura, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
61	PT-P12	Impact of exogenous melatonin on cucumber fruits during cold storage *Manasikan Thammawong, Nanami Sugiyama, Kohei Nakano* *Gifu University*
62	PT-P13	Effects of CA storage on skin characteristics and polyphenol retention of blue berries *Oka Kikunaga, Nijolė Vaitkevičienė, Dovilė Levickienė, Jurgita Kulaitienė, Kanta Machi, Takahisa Nishizu, Teppei Imaizumi* *Gifu University*
63	PT-P14	Biological control of banana crown rot disease by *Bacillus* sp. isolated from Japanese fermented foods *Sena Kawai, Wakana Takahashi, Pongphen Jitareerat, Kohei Nakano, Kasumi Nakagawa* *Gifu University*
64	PT-P15	Effect of storage temperature on bacterial flora and nutrient quality of sweet potato *Fukino Yoshikawa, Risa Kuramoto, Kohei Nakao, Daisuke Hamanaka* *Kagoshima University*
65	PT-P16	Feasibility of mems-based spectrometer for assessing the freshness of leaf lettuce *Hana Homma, Shigeaki Kurimoto, Manasikan Thammawong, Masayasu Nagata, Kohei Nakano* *Gifu University*
66	PT-P17	Development of a container equipped with electric field for shelf-life extension of fresh produce during transportation *Daisuke Hamanaka* *Kagoshima University*
67	PT-P18	Effects of electric field with different frequency on the quality and gene expression of strawberry fruits *Hinako Ide, Yuka Morimoto, Xinru Wu, Qian Yang, Hideo Ueyama, Daisuke Hamanaka* *Kagoshima University*
68	PT-P19	Changes in osmotic and diffusional water permeability of postharvest leafy greens and freshness assessment *Kohaku Kawase, Risa Senda, Hiromichi Itoh, Shinichiro Kuroki* *Kobe University*

No.	Poster ID	Title, Author's name, and First Author's Affiliation
69	PT-P20	Combining effect of emulsifiers with high pressure on the reduction of heat resistance and its recovery of bacterial spores *Mai Eguchi, Seishiro Ariyoshi, Satoshi Sekimoto, Daisuke Hamanaka* *Kagoshima University*
70	PT-P21	Effects of UV-C treatment and storage on surface and internal conditions of tomatoes *Tatsuya Oshima, Yasumasa Ando, Takahisa Nishizu, Teppei Imaizumi* *Gifu University*
71	RE-P1	Valorization of non-lignocellulosic biomass as solid fuel via hydrothermal carbonization *Numan Luthfi, Takashi Fukushima, Kenji Takisawa* *Mie University*
72	RE-P2	A water flow energy harvesting device based on triboelectric nanogenerator for environmental energy collection *Yu-Ting Chiu, Yu-Chieh Chen, Yao-Chuan Tsai* *National Chung Hsing University*
73	RE-P3	Classification of energy consumption efficiency and economic impact analysis of agricultural tractors in South Korea *Wan-Tae Im, In-Seok Hwang, Chang-Seop Shin* *Chungbuk National university*
74	RE-P4	Study of hydrothermal carbonization system using microalgae *Kenji Takisawa, Takashi Fukushima* *Mie University*
75	ST-P1	The development of a real-time monitoring system through IoT-based sensor technology *Gangho Seon, Seongmi Sun, Joonmo Kang, Huimin Shin, Sieun Han, Gwanghyeon Jeon, Hyuckjoo Kim* *Sunchon National University*
76	ST-P2	Enhancement of Raman peaks of agricultural produce by water: A case study of pumpkin flesh *Mizuki Tsuta, Shunsaku Nakajima, Akifumi Ikehata* *Institute of Food Research, NARO*
77	ST-P3	Enhancing spectral data quality on shiny tomato surfaces using polarized hyperspectral imaging *Dayoung Oh, Ye-Na Kim, Byoung-Kwan Cho* *Chungnam National University*
78	WM-P1	Numerical simulation of vacuum membrane distillation applied in ammonia recovery from agricultural wastewater *Bo-Sheng Wu, Hsiao-De Liu, Wu-Yang Sean* *National Chung Hsing University*
79	PA-P12	Development of an autonomous spraying vehicle with enhanced ultra-wideband navigation for papaya greenhouse *Cong-Chuan Pham, Wei-Chih Lin* *National Sun Yat-Sen University*

SEKI's history of solving social issues

For further efficiency and productivity improvement.
Starting with the founder's desire to "free farmers from harsh labor",
Through the provision of products and services that satisfy customers,
We have created social and economic value.

Environment

Smart agri machine

ISEKI

Shibuya

Innovating Agriculture

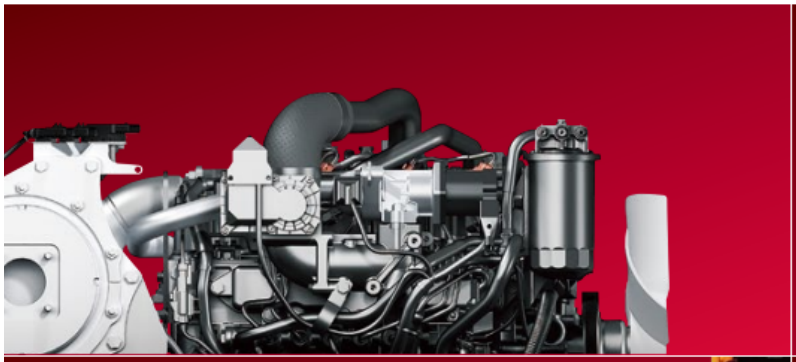
SHIBUYA SEIKI CO.,LTD.

Shibuya Seiki Co., Ltd.

Official Website

Shibuya Seiki is one of the leading fruit & vegetables sorting/grading system manufacturers in Japan.

YANMAR



A SUSTAINABLE FUTURE

Sustainable prosperity for all and,
A Sustainable natural environment.
YANMAR will pursue these two “sustainables” to the next level,
towards a new era of prosperity in the coming century.

yanmar.com

FarmPilot KSAS

Agri Robo シリーズ

For Earth, For Life
Kubota

自動運転機能付トラクタ

WEBサイトは
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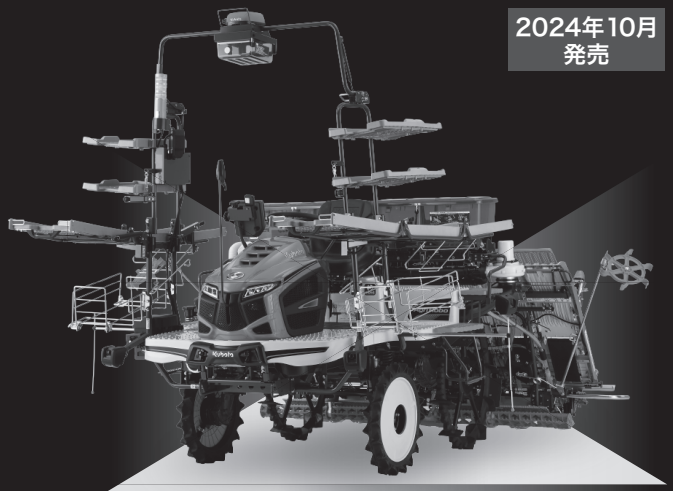
MR1000A

(有人／無人仕様) ※写真は無人仕様です。

自動運転機能付田植機

2024年10月
発売



NW80SA

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挑戦する経営者たちへ。

クボタスマート農業

自動運転機能付
普通型コンバイン

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株式会社クボタ


For Earth, For Life
Kubota
ON YOUR SIDE
1890年の創業から「食料・水・環境」の課題解決に向けて歩んできたクボタ。
これからも一歩一歩、すべての人と心をひとつに、明日へと進み続けます。

株式会社クボタ