PROGRAM BOOK

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The 12th International Symposium on Machinery and Mechatronics for Agricultural and Biosystems Engineering

ISMAB2026

October 20 (Tue) - 24 (Sat)

BEXCO Exhibition Center 2

Busan, Republic of Korea

Organized by

Korean Society for Agricultural Machinery (KSAM)

Japanese Society of Agricultural Machinery and Food Engineers (JSAM)

Chinese Institute of Agricultural Machinery (CIAM)





Host and Organizer (사)한국농업기계학회 KSAM Korean Society for Agricultural Machinery

Co-organizer 발농업기계개발연구센터 UPLAND-FIELD MACHINERY RESEARCH CENTER · 전남대학교 디지털농업 전문인력양성 및 기술 개발 사업단 · PIONEER 부산대학교 국립대학육성사업 · 부산대학교 PUSAN NATIONAL UNIVERSITY 생명산업융합연구원 · 부산관광공사

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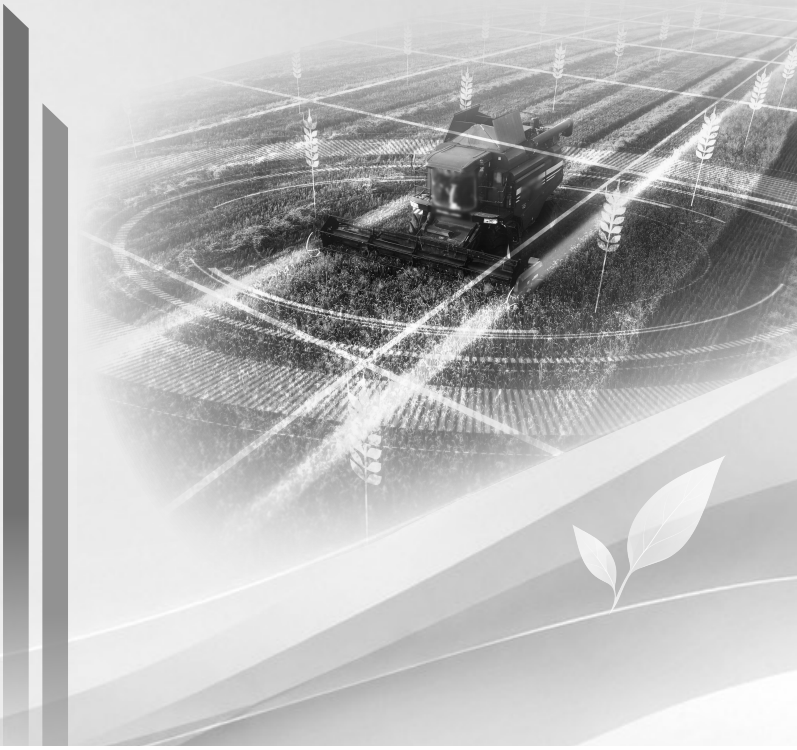
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Welcome and Opening Address

Good morning, ladies and gentlemen, respected invited speakers, distinguished professors and students, and honored guests, welcome to Korea and welcome to Busan.

On behalf of the Korean Society for Agricultural Machinery (KSAM), we welcome all of you to the 12th ISMAB conference, 20th ~ 24th October 2026, here at BEXCO, Busan, Republic of Korea. AABEA (Asian Agricultural and Biological Engineering Association), is for members of CIAM (The Chinese Institute of Agricultural Machinery), JSAM (The Japanese Society of Agricultural Machinery), and KSAM. AABEA continues the tradition to hold the biennial ISMAB (International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering). We would like to express our deep appreciation to Dr. Je-Hoon Sung for congratulatory remarks, to invited speakers for valuable presentations, and AABEA members and all the participants for grateful contribution. Special thanks also should go to the ISMAB committee members and staffs for their tremendous efforts.

Agriculture and Biosystems Engineering field has made dramatic and meaningful achievement to provide necessary engineering technologies for food security. However, recent backgrounds of world population increase, climate change, agricultural labor reduction, global market competitiveness assign us various problems and challenges. Quick mega trends of 4th revolution technologies such as AI and robot enable to overcome these issues and develop better opportunities.

This conference will bring together leading researchers, engineers, scientists from various disciplines of agriculture and biosystems engineering around the world. We have about 450 pre-registrations, and including on-site registration, we expect to have a total of about 550 attendants. Total 317 abstracts, including 166 for oral and 151 for poster presentations, were submitted. The symposium will provide a unified communication platform for researchers and engineers in the topics of Machinery and Mechatronics for Agriculture and Biosystems Engineering. During the conference, there will be substantial time for presentation and discussion. Attendants will find various activities useful in bringing together a diverse group of engineers and technologists across the disciplines for the generation of new ideas, collaboration potential, and business opportunities.

We also hope all attendees spend an enjoyable time in Busan, one of the beautiful cities in Korea. Welcome to the conference again and thank you very much.

Hyuck Joo Kim
ISMAB Conference Chair, AABEA

Sun-Ok Chung
President, Korean Society for Agricultural Machinery

Congratulatory Remarks

Good morning, distinguished scholars, researchers, industry experts, and honored guests. It is a great pleasure and honor to be with you today. My name is Sung Je-hoon, and I am the Director General of the National Institute of Agricultural Sciences under the Rural Development Administration of the Republic of Korea.

On behalf of the National Institute of Agricultural Sciences, I would like to extend my warmest congratulations on the opening of the 12th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, ISMAB, here in Busan. The 12th ISMAB comes at a particularly important time for agriculture and biosystems engineering. Today, agriculture is facing increasingly complex challenges, including climate change, resource constraints, and the growing need for more sustainable and resilient production systems. Against this backdrop, the 12th ISMAB provides a timely and valuable forum for researchers and professionals from around the world to exchange ideas, share the latest research findings, and explore new possibilities in machinery and mechatronics for agriculture and biosystems engineering.

As a researcher with a background in precision agriculture, I am particularly interested in how agricultural machinery and intelligent technologies are evolving to enable more precise, efficient, and sustainable farming systems. In particular, the convergence of AI, information processing, sensing technologies, and agricultural machinery is opening new possibilities for smart and autonomous agriculture. The diverse perspectives offered by our distinguished keynote speakers, covering agricultural mechanization, smart and precision agriculture, and future research directions across Asia, will provide valuable insights into the future of agricultural engineering. I look forward to the insightful discussions and exchanges that this symposium will bring, and to seeing how advances in agricultural engineering can contribute to a more sustainable and resilient future for agriculture. Finally, I would like to sincerely thank the ISMAB organizers for inviting me to this meaningful gathering and for bringing together distinguished experts from around the world. I hope this symposium will foster lasting international networks, meaningful collaborations, and new opportunities for innovation.

I also hope that, after the scientific sessions, you will enjoy a pleasant evening together and have the opportunity to experience Busan's beautiful coastline, vibrant culture, and unique local attractions. Thank you once again, and I wish you all a successful symposium and a memorable stay in Busan. Thank you very much.

Je-hoon Sung

Director General
National Institute of Agricultural Sciences
Rural Development Administration, Republic of Korea

ISMAB2026 Committee

KSAM President and Conference Chair

- Prof. Sun-Ok Chung, Chungnam National University (KSAM President, Korea)
- Prof. Hyuck Joo Kim, Sunchon National University (Conference Chair, Korea)

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- Dr. Jong Hoon Kim, Korea Food Research Institute (Korea)
- Dr. Je Hoon Sung, National Institute of Agricultural Sciences (Korea)
- Mr. Ho-Jong Choi, Korea Agricultural Machinery Industry Cooperative (Korea)
- Mr. Dae Sik Kang, GreenMax Corporation (Korea)
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- Prof. Eiji Morimoto, Kobe University (Japan)
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- Prof. Chung-Liang Chang, National Pingtung University of Science and Technology (Taiwan)
- Prof. Meng Li Tsai, National Ilan University (Taiwan)

Program Committee

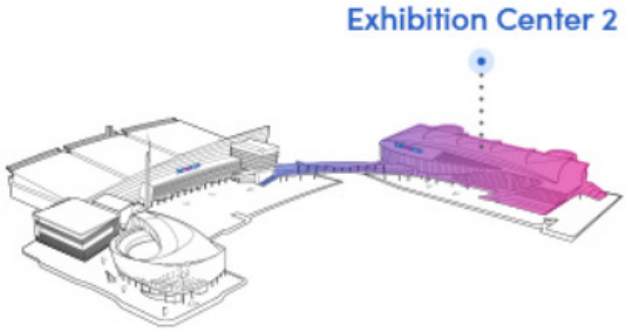
- Prof. Yu Shin Ha, Kyungpook National University (Korea)
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- Prof. Hyun Kwon Suh, Sejong University (Korea)
- Prof. Jaesung Park, Pusan National University (Korea)
- Prof. Xiongzhe Han, Seoul National University (Korea)
- Prof. Rackwoo Kim, Seoul National University (Korea)
- Prof. Woo Jae Cho, Gyeongsang National University (Korea)

Program Overview

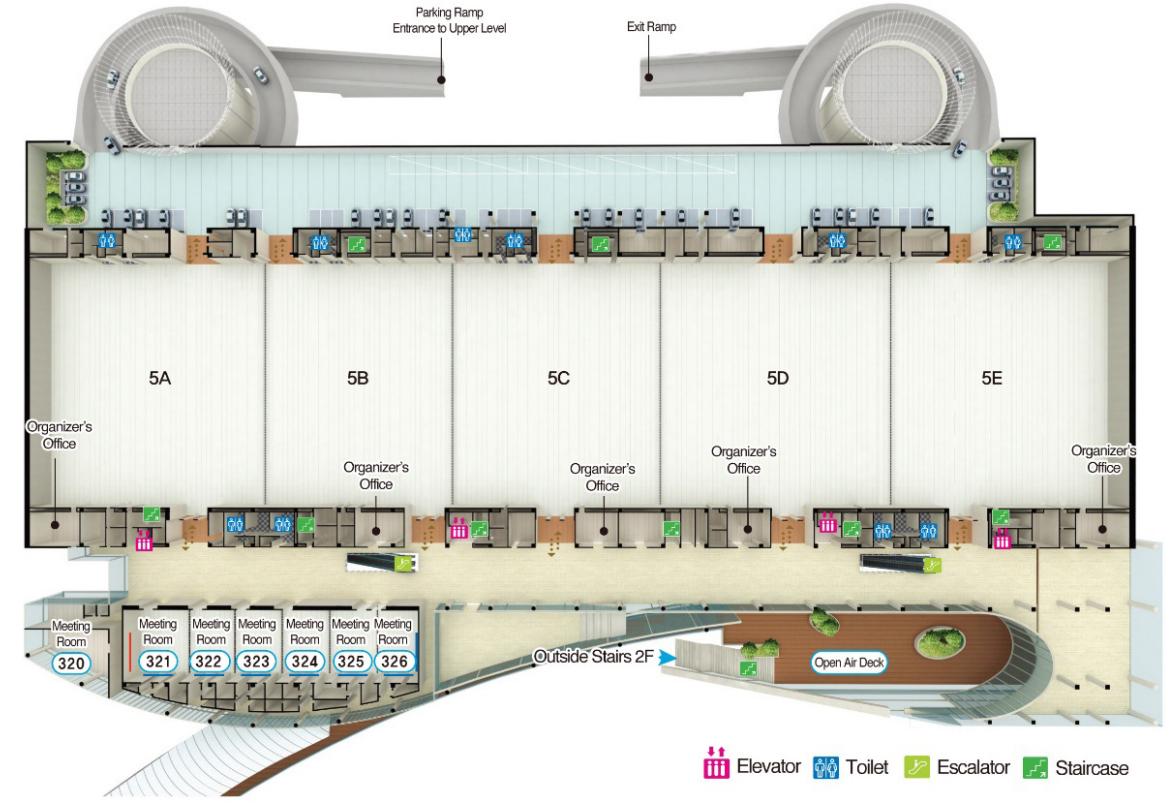
Title	12th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering (ISMAB2026)
Venue	Exhibition Center 2, BEXCO (https://www.bexco.co.kr/eng), Busan, Republic of Korea
Theme	Strengthening Global Competitiveness and Exploring Market Opportunity
Date	October 20 (Tue), afternoon – 24 (Sat), morning (*subject to change depending on circumstances)

Program			
Date	Event and Schedule		Venue
20th (Tue)	▪ 13:00~18:00 ▪ 13:00~17:00 ▪ 18:00~21:00	Registration Open Technical Special Lectures for KSAM students, 4 Lectures Welcome Reception for invited VIPs and ISMAB committee members	▪ 3rd Floor ▪ Rooms 321~324 ▪ Unloading parking → restaurant
21st (Wed)	▪ 09:30~10:00 ▪ 10:00~12:30 ▪ 12:30~14:00 ▪ 14:00~17:30 ▪ 18:00~21:00	ISMAB Opening Ceremony, Group Photo Plenary Session (5 speakers, 25 min each) Lunch (Exhibition Center 1, B1) Technical Sessions, Oral, coffee break KSAM Special Sessions Conference Banquet	▪ Hall 5A ▪ Hall 5A ▪ The Party Buffet ▪ Rooms 321~326, 121~122 ▪ Rooms 123~126 ▪ Hall 5A
22nd (Thu)	▪ 09:00~10:00 ▪ 10:00~12:00 ▪ 12:00~13:30 ▪ 13:30~16:30 ▪ 17:00~18:00 ▪ 18:00~21:00	KSAM General Assembly Poster Session, 1 coffee any time Lunch (Exhibition Center 1, B1) Technical Sessions, Oral, coffee break KSAM Special Sessions AABEA, ISMAB, EAEF Meetings ISMAB Closing Ceremony AABEA, ISMAB, EAEF Dinner	▪ Hall 5A ▪ Hall 5A ▪ The Party Buffet ▪ Rooms 321~326, 121~122 ▪ Rooms 123~126 ▪ Room 320 ▪ Hall 5A ▪ Unloading parking → restaurant
23rd (Fri)	▪ 09:00~17:00 – 09:00~10:00 – 10:00~12:00 – 12:00~13:00 – 13:00~14:00 – 14:00~16:00 – 16:00~17:00	Technical Tour BEXCO to “Department of Upland Crop Science, RDA” (Miryang) Tour of “Department of Upland Crop Science, RDA” Lunch Move to “Protected Horticulture Research Institute” (Haman) Tour of “Protected Horticulture Research Institute” Return to BEXCO	▪ Meet at “Unloading parking” at 09:00
24th (Sat)	▪ 09:00~18:00	Committee Meetings	▪ To be assigned

Floor Plan



Exhibition Center 2
F3



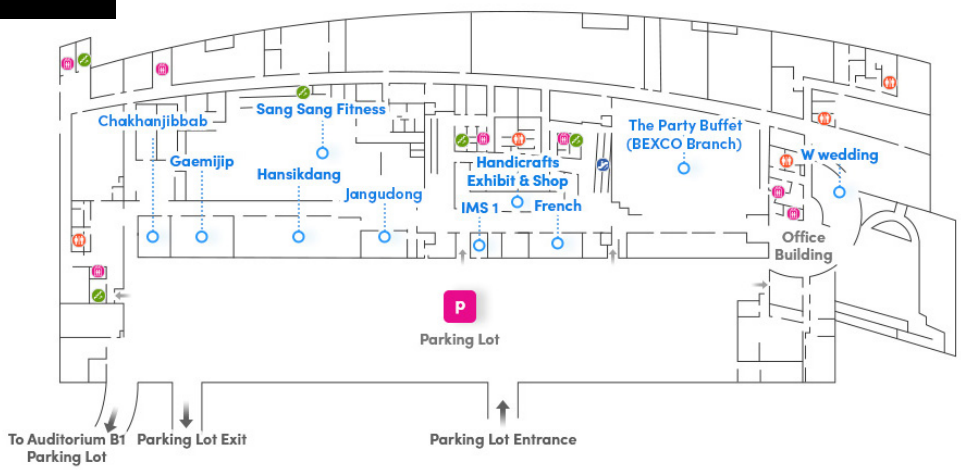
Exhibition Center 2

F1



Exhibition Center 1

B1



Plenary Session: Invited Speakers

■ | 10/21 (Wed) | 10:00~12:30, Hall 5A

	Name	Nation	Affiliation	Presentation Title
				Chair: Xiongzhe Han (Seoul National University)
	**Engr. Eleonor Fausto Santiago**	Philippines	DA–PHilMech	The PHilMech Green Blueprint: Transforming Philippine Agriculture through Mechanization
	**Dr. Rosnah Shamsudin**	Malaysia	Universiti Putra Malaysia / Malaysian Society of Agricultural and Food Engineers	Agricultural and food Mechanization in Malaysian SMEs: Industry Status, Market Trends, and Future Research Directions
	**Dr. Yi-Chich Chiu**	Taiwan	National Ilan University	Agricultural machinery market trends, industry status, and current research landscapes in Taiwan
	**Dr. Michihisa Iida**	Japan	Kyoto University	Agricultural machinery market trends, industry status, and current research landscapes in Japan
	**Dr. Sun-Ok Chung**	Republic of Korea	Chungnam National University	Trends of Smart Precision Agriculture in Korea

Keynote Speakers

■ | 10/21 (Wed) | 14:00~14:30, Room 323

	Name	Nation	Affiliation	Presentation Title
				Chair: Prof. Eiji Morimoto (Kobe University)
	Dr. Eiji Morimoto	Japan	Kobe University	AI-Driven Innovation for Sustainable and Intelligent Agricultural Systems

■ | 10/21 (Wed) | 14:00~14:30, Room 326

	Name	Nation	Affiliation	Presentation Title
				Chair: Prof. Rack-woo Kim (Seoul National University)
	Dr. Yao-Chuan Tsai	Taiwan	National Chung Hsing University	Smart poultry farming: Integrating AI for next-generation management

ISMAB2026 Oral Presentation

| 10/21 (Wed) |

Room 321 **Precision Agriculture Machinery and Systems 1 (PA-1)**

Chair: Prof. Xiongzhe Han (Seoul National University)

PA-01	14:00~14:15	CORN SILK MATURITY RECOGNITION FROM UAV IMAGERY USING YOLO SEGMENTATION AND FUZZY C-MEANS CLUSTERING Sheng-Wei Chen*, Wu-Yang Sean
PA-02	14:15~14:30	SIMULATION-TO-FIELD DEVELOPMENT OF AN AUTONOMOUS GREENHOUSE NAVIGATION AND SENSING ROBOT Sutan Muhamad Sadam Awal*, Yamato Sakurai, Dong Thanh Pham, Koichi Nomura, Masaharu Kitano, Daisuke Yasutake, Muneshi Mitsuoka, Takashi Okayasu
PA-03	14:30~14:45	ARUCO-BASED INDOOR LOCALIZATION AND HOVERING CONTROL FOR A QUADROTOR UAV Yu-Tse Lee, Chung-Liang Chang*
PA-04	14:45~15:00	PERFORMANCE EVALUATION AND IMPROVEMENT POTENTIAL OF A TOMATO DE-LEAFING ROBOT USING A MAIN STEM-BASED APPROACH Tokihiro FUKATSU*, Masakazu KASHINO, Hideto KUROSAKI
PA-05	15:00~15:15	DEVELOPMENT OF AN ELECTRONIC NOSE WITH PI-CONTROLLED TEMPERATURE REGULATION FOR MONITORING POULTRY LITTER FERMENTATION Jing-Xiang Lu, Chin-Cheng Wu *, Chung-Yen Chuang
PA-06	15:15~15:30	ACCURACY EVALUATION OF LIDAR-INERTIAL SLAM-BASED AUTONOMOUS NAVIGATION IN GREENHOUSE ENVIRONMENTS Nang Nguyen Van*, Hayato Seki, Oyetayo Olukorede Oyebode
PA-07	15:30~15:45	DESIGN OF AN INTEGRATED THREE-AXIS MAGNETIC FIELD SENSOR Shu-Yi Wen, Zhi-Xuan Dai*

Room 321 Precision Agriculture Machinery and Systems 2 (PA-2)

Chair: Prof. Xiongzhe Han (Seoul National University)

PA-08	16:00~16:15	ON-TREE PEAR SIZE ESTIMATION USING UPWARD-FACING RGB-D IMAGING IN HORIZONTAL TRELLIS ORCHARDS Meguna OHATA, Jaehwan LEE, Tomoko HORIE, Hiromichil TOH, Eiji MORIMOTO*
PA-09	16:15~16:30	DEVELOPMENT OF ROBUST 3D PEAR FRUIT COUNTING SYSTEM USING LIDAR-CAMERA FUSION Jaehwan LEE, Meguna OHATA, Tomoko HORIE, Hiromichi ITOH, Eiji MORIMOTO*
PA-10	16:30~16:45	GROUND-BASED LIDAR FOR CROP STRUCTURAL ASSESSMENT: FIELD ACQUISITION AND WIND-EFFECT EVALUATION Eldon DE PADUA, Jaehwan LEE, Eiji MORIMOTO*
PA-11	16:45~17:00	FIELD PERFORMANCE OF THE SELF-PROPELLED CABBAGE HARVESTERS UNDER SINGLE AND DOUBLE-ROW FIELD CONDITIONS Cholet Nyangoma Atulinda, Md Nasim Reza, Ezatullah Zakir, Md Razob Ali, Jose Pocholo Dorongon, Sun-Ok Chung*
PA-12	17:00~17:15	DEVELOPMENT AND EVALUATION OF A TRANSFER PLATFORM FOR RAIL-TO-RAIL MOVEMENT IN GREENHOUSE HORTICULTURE Sota Yoshida*, Kota Shimomoto, Nozomu Ohta, Tokihiro Fukatsu

Room 322 Precision Agriculture Machinery and Systems 3 (PA–3)

Chair: Prof. Woo–Jae Cho (Gyeongsang National University)

PA–13	14:00~14:15	DEVELOPMENT OF A CFD–BASED GREENHOUSE SURROGATE MODEL FOR DIGITAL TWIN ENVIRONMENTAL CONTROL Hsuan–Yu Chen, Cheng–Wei Fu, Chen–Kang Huang*
PA–14	14:15~14:30	RESEARCH ON A VISION–GUIDED MULTI–TASK ROBOTIC SYSTEM FOR AUTONOMOUS *PHALAENOPSIS* ORCHID MANAGEMENT IN GREENHOUSES Duc Tai Nguyen, Doan Dang Khoa Nguyen, Wei–Chih Lin*
PA–15	14:30~14:45	A CLUSTER–BASED THINNING RECOMMENDATION FRAMEWORK FOR INTELLIGENT PEACH FRUITLET SELECTION Nilda Navarette Dela Cruz, Hao–Ting Lin*
PA–16	14:45~15:00	A HYBRID WHEELED–LEGGED QUADRUPED PLATFORM WITH ACTIVE BALANCING FOR MULTI–TASK AGRICULTURAL APPLICATIONS Doan Dang Khoa Nguyen, Nam Khanh Nguyen, Dang Khanh Linh Le, Wei–Chih Lin*
PA–17	15:00~15:15	3D SLAM AND RELOCALIZATION TOWARDS AUTONOMOUS NAVIGATION IN PAPAYA GREENHOUSE USING NANO–GICP REGISTRATION Chi Cuong Nguyen, Dang Khanh Linh Le, Wei–Chih Lin*
PA–18	15:15~15:30	EARLY DETECTION OF BARLEY WATERLOGGING USING UAV–BASED HYPERSPECTRAL IMAGERY Ji An Kim, Do Hyun An, Hyo Jeong Lee, Ye Seong Kang*, Yeong Son Jo, Seung Ga Oh, Hui Su Bae, Woo Jin Im
PA–19	15:30~15:45	PRE–HARVEST PREDICTION OF APPLE SOLUBLE SOLIDS CONTENT USING UAV BASED MULTISPECTRAL IMAGERY Chang Hyeok Park, Chan Seok Ryu*, Gangln Je, HoJun Kwon, Gang–Jin Lee

Room 322 Precision Agriculture Machinery and Systems 4 (PA-4)

Chair: Prof. Woo-Jae Cho (Gyeongsang National University)

PA-20	16:00~16:15	STUDY ON THE ESTIMATION OF LOCAL HORIZONTAL WIND ABOVE FIELD FROM UAV-MOUNTED ULTRASONIC ANEMOMETER Hiroto Zushi, Atsuru Fujimoto*
PA-21	16:15~16:30	PRELIMINARY EVALUATION OF ULTRASONIC-BASED LATERAL OFFSET SENSING FOR A SELF-PROPELLED SEEDER Miaomiao Tu, Md Nasim Reza, Dae-Hyun Lee, Sun-Ok Chung*
PA-22	16:30~16:45	DEVELOPMENT OF AN AIOT-BASED MONITORING SYSTEM FOR EARLY WARNING OF RED IMPORTED FIRE ANT (*SOLENOPSIS INVICTA*) NUPTIAL FLIGHTS Jui-Lin Hsu, Pei-Tzu O, Po-Cheng Shih, Cheng-Wei Fu, Scotty Yang, Chen-Kang Huang*
PA-23	16:45~17:00	LED-BASED FREQUENCY-DOMAIN FLIM FOR CELLULAR-SCALE CHLOROPHYLL A FLUORESCENCE CHARACTERIZATION IN *ELODEA DENSA* Cheng-Hao Lin, Hsiao-Mei Wu*
PA-24	17:00~17:15	BRIDGING UAV AND SATELLITE OBSERVATIONS FOR SOYBEAN LAI MAPPING Gyujin Jang, Jaeyoung Lee, Haneul Kim, Seung Hwan Jeong, Hak-Jin Kim*

Room 323 AI and Information Processing 1 (AI-1)

Chair: Prof. Eiji Morimoto (Kobe University)

Keynote	14:00~14:30	AI-DRIVEN INNOVATION FOR SUSTAINABLE AND INTELLIGENT AGRICULTURAL SYSTEMS Dr. Eiji Morimoto
AI-01	14:30~14:45	INTERACTIVE WHAT-IF DASHBOARD FOR SIX-HOUR VENTILATION PLANNING IN COMMERCIAL BROILER HOUSES Suhendra, Hao-Ting Lin*
AI-02	14:45~15:00	INTELLIGENT-ASSISTED REAL-TIME SPECTRAL SENSING PLATFORM FOR POINT-OF-CARE *SALMONELLA* TYPHIMURIUM DNA DETECTION Hong Zhi Zhang, Jyh Jian Chen*
AI-03	15:00~15:15	POULTRY LITTER CONDITION CLASSIFICATION USING AN ELECTRONIC NOSE WITH RFECV-BASED FEATURE SELECTION Kai-Feng Cheng, Yu-Hsuan Shen, Chin-Cheng Wu*
AI-04	15:15~15:30	MULTI-SCALE PHENOTYPING OF GREENHOUSE CUCUMBER CANOPIES: INTEGRATING AI VISION WITH 3D GAUSSIAN SPLATTING Dong Thanh Pham, *, Muneshi Mitsuoka, Daisuke Yasutake, Takenori Ozaki, Masaharu Koga, Takashi Okayasu
AI-05	15:30~15:45	DOMAIN ADAPTATION BASED ON INTERPOLATION IMAGES GENERATION IMPROVE DEER DETECTION PERFORMANCE Yu Tanaka, Ryohei Masuda*, Michihisa Iida*, Masahiko Suguri

Room 323 AI and Information Processing 2 (AI-2)

Chair: Prof. Eiji Morimoto (Kobe University)

AI-06	16:00~16:15	TIME-OF-DAY VARIATION IN UAS-DERIVED CANOPY TEMPERATURE ACROSS IRRIGATION LEVELS IN SOYBEAN Anjin Chang*, Caden Wade, Angie Gradiz, Kristine Lee, Younsuk Dong
AI-07	16:15~16:30	DRL-BASED FRUIT-APPROACH CONTROL IN A DIGITAL TWIN SIMULATION ENVIRONMENT FOR TOMATO-HARVESTING ROBOTS Hiroto Nakakubo, Hiroshi Fukuoka, Masahiro Ohtani, Kenichi Iida*
AI-08	16:30~16:45	PREDICTION OF LIGNIN CONTENT IN RICE STRAW USING EXCITATION-EMISSION MATRIX FLUORESCENCE SPECTROSCOPY AND CHEMOMETRIC MODELING Pornpimol Moolkaew, Yoshito Saito*, Takuji Miyamoto
AI-09	16:45~17:00	ONE BACKBONE IS ENOUGH: UNIFYING RGB-NIR SEMANTIC AND INSTANCE SEGMENTATION FOR EFFICIENT POTATO DEFECT INSPECTION Aulia Rizkiana, Byoung-Kwan Cho*
AI-10	17:00~17:15	LLM-ASSISTED WEB DATA INTEGRATION FOR CABBAGE SEEDLING SUPPLY, AGROMETEOROLOGICAL LAGS, AND WHOLESALE PRICE-RISK WARNING Po-Cheng Shih, Po-Yu Ho, Yi-Chih Chiu*

Room 324 AI and Information Processing 3 (AI-3)

Chair: Dae-Hyun Jung (Kyung Hee University)

AI-11	14:00~14:15	BERRYCOMP: JOINT GEOMETRY AND APPEARANCE RECONSTRUCTION OF OCCLUDED STRAWBERRIES Minhyeok Jang, Su-Min Chin, Dae-Hyun Jung*
AI-12	14:15~14:30	MULTISPECTRAL IMAGING AND AI-BASED DEFECT SEGMENTATION FOR AUTOMATED NON-DESTRUCTIVE QUALITY INSPECTION AND SORTING OF TOMATOES Umuhoza Aline*, Yena Kim, Aulia Rizkiana, Byoung-Kwan Cho*
AI-13	14:30~14:45	TOPOSKEL-GNN: TOPOLOGY-AWARE SKELETON GRAPH LEARNING FOR APPLE TREE PRUNING POINT DETECTION Anqi Liu, Woo-Young Kim, Kyeong-Hwan Lee*
AI-14	14:45~15:00	MULTI-VIEW FUSION OF UAV IMAGE MASKS FOR 3D FLOWER INSTANCE SEGMENTATION AND COUNTING Phanith Chea, Kyeong-Hwan Lee*
AI-15	15:00~15:15	DEEP LEARNING-BASED MONITORING AND EARLY WARNING OF EXTERNAL ABNORMALITIES IN MULTI-TIER AVIARY LAYING HENS Jia-En Lin*, Yu-Chieh Chen, Ming-Kun Hsieh, Yao-Chuan Tsai
AI-16	15:15~15:30	DEVELOPMENT OF A HYBRID RAG ADVISORY SYSTEM FOR PHALAENOPSIS CULTIVATION BASED ON A LOCAL LLM Shao-Yang Wu, Wen-Lin Chu*, Wei-Ling Chen[2], Hsi-Chun Hung
AI-17	15:30~15:45	INTEGRATING CFD, ENVIRONMENTAL SENSING, AND COMPUTER VISION TO CHARACTERIZE SPATIAL ASSOCIATIONS BETWEEN AIRFLOW AND BROILER DISTRIBUTION Jin-Yeong Lee, Min-Young Hwang, Ryu-Gap Lim*

Room 324 AI and Information Processing 4 (AI-4)

Chair: Dae-Hyun Jung (Kyung Hee University)

AI-18	16:00~16:15	ANATOMY-AWARE COMPOSITIONAL GENERATION OF 3D TOMATO PLANTS: COUPLING A MEASURED L-SYSTEM GRAMMAR WITH PER-ORGAN DIFFUSION MODELS Omia Emmanuel, Byoung-Kwan Cho*
AI-19	16:15~16:30	SELECTION OF DIFFUSION-GENERATED IMAGES FOR PEST INSTANCE SEGMENTATION ON STICKY TRAPS Jung-sang Yoo, Soo Been Cho, Ji Won Choi, Seung-Hwan Yang*
AI-20	16:30~16:45	SEQUENTIAL 3D SHAPE COMPLETION OF ON-PLANT KOREAN MELONS TOWARD AUTO MATED SELECTIVE HARVESTING Sungjay Kim, Gyumin Kim, Xianghui Xin, Yeongjun Go, Ghiseok Kim*
AI-21	16:45~17:00	PHYSICS-GUIDED HYPERSPECTRAL CLASSIFICATION OF MICRO- AND NANOPLASTICS IN HYDROPONIC NUTRIENT SOLUTIONS Yea-Jin Park, Youngho Jeon, Suji Lee, Jungmok You*, Dae-Hyun Jung
AI-22	17:00~17:15	REFERENCE-GUIDED INSTANCE SEGMENTATION OF APPLE FLOWERS AND BUDS USING VISION FOUNDATION MODELS Jintack Jeon, Baek-Gyeom Sung, Man-Jung Kim, Dae-Hyun Lee*
AI-23	17:15~17:30	BAND-COMBINATION CHANNELS FOR NON-DESTRUCTIVE RICE PROTEIN PREDICTION USING NIR HYPER SPECTRAL IMAGING Jeong-Yong Shin, Hong Gu Lee, Seung Woo Chun, Woo Hyeong Yu, Jeong Woo Han, Woon Tak Han, Giyoung Kim, Wan-Gyu Sang, Changju Yang, Changyeun Mo*

Room 325 Field Machinery and Systems 1 (FM-1)

Chair: Prof. Young-Jun Park (Seoul National University)

FM-01	14:00~14:15	A RETROFIT SYSTEM FOR AUTOMATIC TILLAGE DEPTH CONTROL ON CONVENTIONAL TRACTORS Phuoc Bao Long Do, Dang Khanh Linh Le, Wei-Chih Lin*
FM-02	14:15~14:30	TILLAGE ELECTRIFICATION: EFFECTS OF A REDUCED-TILLAGE IMPLEMENT ON ENERGY USE AND GREENHOUSE SPINACH PERFORMANCE Oyetayo Olukorede Oyebode, Ryota Sakata, Naoki Tsunekawa, Nang Nguyen Van
FM-03	14:30~14:45	TEMPORAL OBSERVATION FOR REINFORCEMENT LEARNING OBSTACLE AVOIDANCE IN A TRACKED AGRICULTURAL ROBOT Yu-Hsien Lee*, Wu-Huan Hsu
FM-04	14:45~15:00	DEVELOPMENT OF STICK-SLIP STEERING MODEL FOR AGRICULTURAL VEHICLES Masahisa Watanabe*
FM-05	15:00~15:15	DEVELOPMENT OF SENSOR FUSION FRAMEWORK FOR OBSTACLE DETECTION AND COLLISION AVOIDANCE IN AN ELECTRIC MOWER Runa Kato, Jia Qin, Michihisa Iida*
FM-06	15:15~15:30	TREND ANALYSIS OF FACTORS AFFECTING LATERAL OVERTURNING SAFETY IN WHEELED AND TRACKED FORESTRY TRACTORS Moon-Kyeong Jang, Jeong-Hun Kim, Chan-Young Lee, Ju-Seok Nam*
FM-07	15:30~15:45	STRUCTURAL SAFETY EVALUATION OF AN AGRICULTURAL TRACTOR FRONT-END LOADER Jeong-Hun Kim, Joon-Hyung Park, Moon-Kyeong Jang, Ju-Seok Nam*

Room 325 Field Machinery and Systems 2 (FM-2)

Chair: Prof. Young-Jun Park (Seoul National University)

FM-08	16:00~16:15	OPERATOR COMFORT EVALUATION BY VIBRATION AND INCLINATION OF A 36.8-kW ONE-ROW CABBAGE HARVESTER UNDER KOREAN FIELD CONDITIONS Md Razob Ali, Md Nasim Reza, Ezatullah Zakir, Cholet Nyangoma Atulinda, Sun-Ok Chung*
FM-09	16:15~16:30	PHYSICS-GUIDED NEURAL NETWORK FOR CONE INDEX PREDICTION FROM SOIL PHYSICAL PROPERTIES Joon-Seo Kim, Sang-Wook Park, Seung-Yeon Lee, Ji-Tae Kim*
FM-10	16:30~16:45	AN ADAPTIVE NMPC FRAMEWORK FOR ACCURATE AND EFFICIENT PATH TRACKING OF ORCHARD ROBOTS Andong Huang, Woo-Young Kim, Kyeong-Hwan Lee*
FM-11	16:45~17:00	ANALYSIS OF SLOPE DRIVING CHARACTERISTICS OF A SMALL TRACKED VEHICLE THROUGH SOIL BIN TESTS Chan-Young Lee, Jeong-Hun Kim, Joon-Hyung Park, Ju-Seok Nam*
FM-12	17:00~17:15	STRUCTURAL AND DYNAMIC ASSESSMENT OF A BROILER-CATCHING ROBOT UNDER VARIABLE LOADS WITH EXPERIMENTAL VALIDATION Md Faruk Hossain, Md Rayhan Mahmud, Jeong-Chan Lee, Ryu-Gap Lim*
FM-13	17:15~17:30	HISTORY-DEPENDENT ELASTO-PLASTIC CONTACT MODEL FOR DEM SIMULATION OF CYCLIC SOIL COMPACTION Toyohiro KATO, Taiki ARAO, Dong Thanh PHAM, Takashi OKAYASU, Muneshi MITSUOKA*

Room 326 Smart Farm Systems and Renewable Energy 1 (SF-1)

Chair: Prof. Rack-woo Kim (Seoul National University)

Keynote	14:00~14:30	SMART POULTRY FARMING: INTEGRATING AI FOR NEXT-GENERATION MANAGEMENT Dr. Yao-Chuan Tsai
SF-01	14:30~14:45	SPATIAL DYNAMICS OF AMMONIA GRADIENTS AND DIRECTIONAL SENSING EFFECTS IN LAYER HOUSES USING INSPECTION ROBOT Chin-Kai Kuo, Xiang-Sheng Huang, Chen-Wei Liang*
SF-02	14:45~15:00	CAPACITY AND INTERNAL RESISTANCE VARIATION OF NCM BATTERIES UNDER DIFFERENT CHARGE-DISCHARGE STRATEGIES AND TEMPERATURE CONTROL Li-Ya Hsiao, Chen-Kang Huang*
SF-03	15:00~15:15	DEVELOPMENT OF A DEEP LEARNING-BASED IMAGE EARLY WARNING SYSTEM FOR BROILER CHICKENS Yu-Jen Shih*, Ming-Kun Hsieh, Yao-Chuan Tsai
SF-04	15:15~15:30	STRATEGY VALIDATION AND ENERGY INTEGRATION OF AN AI LASER WILD BIRD DETERRENT IN AGRICULTURAL FIELDS Chang-Chi Huang*, Wei-Lun Hsu, Kuang-Wen Hsieh, Yao-Chuan Tsai
SF-05	15:30~15:45	AN EDGE-COMPUTING SYSTEM INTEGRATING ACOUSTIC RECOGNITION AND GAS SENSING FOR COW RUMINATION MONITORING Chin-Cheng Wu*, Chung-Yen Chuang, Yi-Chich Chiu

Room 326 Smart Farm Systems and Renewable Energy 2 (SF-2)

Chair: Prof. Rack-woo Kim (Seoul National University)

SF-06	16:00~16:15	DEVELOPMENT OF A VISION-BASED EARLY WARNING STRATEGY FOR FLOCK DISTRIBUTION IN BROILER HOUSES Yu-Chi Liu, Ming-Yih Chang*
SF-07	16:15~16:30	EFFECTS OF SEEDLING IMAGE GRADING ON MARKETABLE WEIGHT-BASED STAGGERED HARVESTING FOR PLANT FACTORY GROWN LETTUCE Chen I-I, Ming-Yih Chang*
SF-08	16:30~16:45	CWSI MAPPING USING POINT MEASUREMENT AND THERMAL IMAGING FOR CABBAGE FIELDS AND APPLE ORCHARDS Md Mamunur Rashid, Jin Hongbin, Md Ashikur Rahman, Md Nasim Reza, Se Yong Lee, Sun-Ok Chung*
SF-09	16:45~17:00	VARIABILITY CHARACTERIZATION OF AMBIENT ENVIRONMENTAL CONDITIONS FOR SMART GREENHOUSE NUTRIENT MANAGEMENT Sakib Robin, Cholet Nyangoma Atulinda, Md Nasim Reza, Hyeunseok Choi, Sun-Ok Chung*
SF-10	17:00~17:15	REAL-TIME SENSOR DATA QUALITY MONITORING AND FAULT DETECTION IN A VERTICAL FARM Md Ashikur Rahman, Ezatullah Zakir, Md Mamunur Rashid, Su Young Lee, MdNasim Reza, Sun-Ok Chung*

Room 121 Post-harvest and Food Processing 1 (PH-1)

Chair: Prof. Changyeun Mo (Kangwon National University)

PH-01	14:00~14:15	DEM SIMULATION OF APPLE MECHANICAL IMPACT RESPONSE Jui-Chun Wang, Wei-Lun Hsu*
PH-02	14:15~14:30	COLOR-UV IMAGE FUSION FOR NONDESTRUCTIVE PREDICTION OF EDAMAME WATER AND FRUCTOSE CONTENT Takumi Murai, Gao Tianqi, Mayume Adachi, Yoshito Saito*
PH-03	14:30~14:45	EFFECTS OF HYDROSTATIC PRESSURE TREATMENT ON THE FUNCTIONAL PROPERTIES OF BLACK GARLIC Sayaka Nishi, Chandan Das, Takahisa Nishizu, Teppei Imaizumi*
PH-04	14:45~15:00	DEEP LEARNING-BASED ESTIMATION OF INTERNAL GARLIC CLOVE TRAITS FROM EXTERNAL BULB IMAGES Jinho Son, Seoeun Lee, Daewook Kwon, Juhee Lee, Wonyeol Choi, Bumseok Park, Youngjune An, Hyunggyu Park, Yushin Ha*
PH-05	15:00~15:15	VISION-BASED SWEET CORN MATURITY IDENTIFICATION FOR AUTOMATED POST-HARVEST GRADING YI-SIANG WANG*, PO-CHUN WANG, BING-YUAN HSIEH, Wu-Yang Sean
PH-06	15:15~15:30	INTERNAL STRUCTURAL ANALYSIS UNCOVERS MICROSCALE WATER MOLECULAR DIFFUSION IN POSTHARVEST SPINACH Kohaku Kawase, Shinichiro Kuroki*
PH-07	15:30~15:45	FROM CONTACT TO NEAR-CONTACTLESS ULTRASOUND: COUPLING EFFECTS ON APPLE FIRMNESS PREDICTION Yudha Putra Arisandy, Chang-Hyup Lee, Jiwon Ryu, Sang-Yeon Kim, Dong-Heun Sung, Sun Seongmi, Ghiseok Kim*

Room 121 Post-harvest and Food Processing 2 (PH-2)

Chair: Prof. Changyeun Mo (Kangwon National University)

PH-08	16:00~16:15	FOREIGN OBJECT DETECTION IN POTATO CHUNKS USING RGB IMAGING AND DEEP LEARNING: PERFORMANCE AND LIMITATIONS Trinh Thanh Duy, Minhyun Kim, Dong-Heun Sung, Seokha Hwang, Harin Jang, Ghiseok Kim*
PH-09	16:15~16:30	SPECTRAL ANALYSIS OF POTATO SLICES AND FOREIGN MATERIALS USING SWIR HYPERSPECTRAL IMAGING Harin Jang, Minhyun Kim, Seokha Hwang, Dong-Heun Sung, Trinh Thanh Duy, Ghiseok Kim*
PH-10	16:30~16:45	DEVELOPMENT OF A PORTABLE NEAR-INFRARED SPECTROSCOPY SYSTEM FOR MONITORING GOCHUJANG FERMENTATION Dong Heun Sung, Jiwon Ryu, Min hyun Kim, Lee Jae-Eun, Trinh Thanh Duy, Ghiseok Kim*
PH-11	16:45~17:00	AUTOMATED QUALITY INSPECTION OF VANILLA BEANS USING COMPUTER VISION AND HYPERSPECTRAL IMAGING Tzu-Yen Weng, Chih-Hsin Yeh, Yi-Hua Lin, Shih-Fang Chen*
PH-12	17:00~17:15	EXPLAINABLE DEEP LEARNING FOR ANALYSIS OF ONION STORAGE ENVIRONMENTAL DATA Jaeeun Lee, Sang-Yeon Kim, Uik Lee, Ghiseok Kim*
PH-13	17:15~17:30	DEVELOPMENT AND OPERATIONAL PARAMETER OPTIMIZATION OF AN AUTOMATED SHELLING SYSTEM FOR DRIED LONGAN Xin-Liang Lai*, Ching-Wei Cheng, Wu-Yang Sean, Ping-Kun Tsai

Room 122 Post-harvest and Food Processing 3 (PH-3)

Chair: Prof. Gun-Woo Kim (Gyeongsang National University)

PH-14	14:00~14:15	TRANSFERABLE WEIGHT LOSS FORECASTING IN COLD-STORED ONIONS USING PHYSICS-CONSTRAINED DEEP LEARNING AND SHORT-TERM CALIBRATION Sang-Yeon Kim, Jaeeun Lee, Uik Lee, Ghiseok Kim*
PH-15	14:15~14:30	BENCHMARKING AND DEPLOYING REAL-TIME DEFECT SEGMENTATION MODELS ON A FRUIT SORTING LINE Huynh Cao The Cuong, Seokha Hwang, Arisandy Yudha Putra, Ghiseok Kim*
PH-16	14:30~14:45	EFFECT OF $CACL_2$-ASSISTED VACUUM IMPREGNATION ON THE ELECTRICAL PROPERTIES OF CARROT TISSUE Kumari Sapna, Takahisa Nishizu, Teppei Imaizumi*
PH-17	14:45~15:00	DEVELOPMENT OF AN ELECTRONIC NOSE FOR MONITORING GOCHUJANG FERMENTATION: GC-MS VOLATILE ANALYSIS AND SENSOR RESPONSE EVALUATION Minhyun Kim, Jiwon Ryu, Dong-Heun Sung, Trinh Thanh Duy, Lee Uik, Ghiseok Kim*
PH-18	15:00~15:15	EARLY DETECTION OF FUTURE BROWNING SITES IN BASIL LEAVES USING HYPERSPECTRAL IMAGING Ayumu Yamada, Shinichiro Kuroki*
PH-19	15:15~15:30	DEEP SPECTRAL-SPATIAL LEARNING FOR APPLE BRUISE DETECTION AND INTERNAL DAMAGE ESTIMATION USING HYPERSPECTRAL IMAGING Jiwon Ryu, Chang-Hyup Lee, Sang-Yeon Kim, Sungjay Kim, Minhyun Kim, Dong Heun Sung, Ghiseok Kim*
PH-20	15:30~15:45	STARCH DIGESTIBILITY OF COOKED RICE WITH DIFFERENT POLISHING DEGREES Yukiharu Ogawa*, Masatsugu Tamura

Room 122 Post-harvest and Food Processing 4 (PH-4)

Chair: Prof. Gun-Woo Kim (Gyeongsang National University)

PH-21	16:00~16:15	MILLIMATER-WAVE TRANSMISSION IMAGING FOR DETECTION OF FOREIGN MATERIAL IN POWDERED PARSLEY AND "AJINOMOTO" Ayano Tamaoki, Kensuke Nakasuka, Tetsuhito Suzuki*
PH-22	16:15~16:30	WIRELESS SENSING SYSTEM WITH AN ONION MIMIC FOR AMBIENT TEMPERATURE, HUMIDITY, AND INTERNAL TEMPERATURE Uik Lee, Jaeeun Lee, Sang-Yeon Kim, Ghiseok Kim*
PH-23	16:30~16:45	NON-DESTRUCTIVE ESTIMATION OF THEANINE CONTENT IN FRESH SHADE-GROWN TEA LEAVES USING MULTI-EXCITATION FLUORESCENCE IMAGING Mao Ito, Tsutomu Niwa, Tomoko Matsuda, Tetsuhito Suzuki*
PH-24	16:45~17:00	NON-DESTRUCTIVE DETECTION OF INTERNAL FLESH ABNORMALITIES IN TILAPIA USING HYPERSPECTRAL IMAGING AND DEEP LEARNING Pin-Wei Chen, Pi-Chung Wu, Kuo-Chi Liao, Shih-Fang Chen*
PH-25	17:00~17:15	REAL-TIME MONITORING FOR ENDPOINT DETERMINATION IN COMMERCIAL-SCALE TWIN-SCREW FRUIT JUICE EXTRACTION Dong-Hyeon Kim, Jae-Min Jung, Do-Hyeok Choi, Wang-Hee Lee*
PH-26	17:15~17:30	POST-HARVEST METABOLIC DYNAMICS IN LETTUCE AND THEIR ASSOCIATION WITH HYPERSPECTRAL RESPONSES K.R.T. Amani Kahandawa, Yuzu Shiota, Shinichiro Kuroki*

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| 10/22 (Thu) |

Room 321	Precision Agriculture Machinery and Systems 5 (PA-5)	
		Chair: Prof. Tadashi Chosa (Tokyo University of Agriculture and Technology)
PA-25	13:30~13:45	KEYPOINT-DRIVEN GEOMETIC POSE ESTIMATION FOR AUTONOMOUS SEEDBED LIFTING WITH NONHOLONOMIC MOBILE ROBOTS Rattana Seng, Woo-Young Kim, Kyeong-Hwan Lee*
PA-26	13:45~14:00	PERSISTENT TARGET RE-IDENTIFICATION FOR HUMAN-FOLLOWING ROBOTS IN ORCHARD ENVIRONMENTS Sanjay Tamang, Woo-Young Kim², Kyeong-Hwan Lee*
PA-27	14:00~14:15	EVALUATION OF SEED METERING AND IN-SOIL PLACEMENT CHARACTERISTICS OF A VACUUM TYPE POINT SEEDER USING SOYBEAN Juhee Lee, Jinho Son, Wonyeol Choi, Bumseok Park, Hyunggyu Park, Yushin Ha*
PA-28	14:15~14:30	RECONSTRUCTION-FREE SOIL PULVERISATION-RATIO ASSESSMENT FRAMEWORK: PIXEL-WISE PHYSICAL-SCALE RECOVERY FROM HETEROGENEOUS RGB-D Zhewang Zhang, Kyeong-Hwan Lee*
PA-29	14:30~14:45	TRACKING ACCURACY EVALUATION OF AUTONOMOUS TRACTORS USING A HYBRID EKF-TRANSFORMER MODEL FOR REAR 3-POINT ESTIMATION Md Rayhan Mahmud, Md Faruk Hossain, Ki-Dong Park, Ryu-Gap Lim*
PA-30	14:45~15:00	PREDICTION OF BARLEY SPIKE COUNT UNDER WATERLOGGING STRESS USING UAV-BASED MULTISPECTRAL IMAGERY Do Hyun An, Ji An Kim, Hyo Jeong Lee, Ye Seong Kang*, Yeong Son Jo, Seung Ga Oh, Hui Su Bae, WooJin Im

Room 321 Precision Agriculture Machinery and Systems 6 (PA-6)

Chair: Prof. Tadashi Chosa (Tokyo University of Agriculture and Technology)

PA-31	15:15~15:30	NON-DESTRUCTIVE PREDICTION OF INTERNAL QUALITY IN ON-VINE MELONS USING HYPERSPECTRAL IMAGING AND MACHINE LEARNING Gyumin Kim, Sungjay Kim, Xianghui Xin, Yeongjun Go, Jaeeun Lee, Donghyeon Seong, Ghiseok Kim*
PA-32	15:30~15:45	PRELIMINARY EVALUATION OF GLASS COATING EFFECTS ON HOPPER DISCHARGE AND FERTILIZER SPREADING DISTRIBUTION Atsuru Fujimoto*
PA-33	15:45~16:00	COMPARISON OF MANUAL AND MECHANIZED TRANSPLANTING OF CABBAGE PRODUCTION IN GREENHOUSE CONDITIONS Ezatullah Zakir, Md Nasim Reza, Cholet Nyangoma Atulinda, Sun-Ok Chung*
PA-34	16:00~16:15	BLOB SELECTION EVALUATION FOR VISION-BASED OUTDOOR ROBOT LOCALIZATION USING MOG2 SUBTRACTION Nguyen Van Dieu, Tadashi Chosa*
PA-35	16:15~16:30	MEASUREMENT BIAS OF AN FDR SOIL MOISTURE SENSOR UNDER DRYING-REWETTING CONDITIONS Minjoo Kim, Jaesung Park*, Seokyung Park

Room 322 Precision Agriculture Machinery and Systems 7 (PA-7)

Chair: Prof. Wen-Lin Chu (National Chung Hsing University)

PA-36	13:30~13:45	DEVELOPMENT OF A GENERAL GUIDELINE FOR DATA-BASED INTEGRATED PEST MANAGEMENT UNDER ISO/TC 347 Seongmin Park, Soo Chung*
PA-37	13:45~14:00	STEM FOLLOWING AND CONTINUOUS CUTTING OF TOMATO LOWER LEAVES USING A FORCE CONTROLLED HEDGE TRIMMER-TYPE DE-LEAFING ROBOT Masakazu Kashino*, Hideto Kurosaki, Tokihiro Fukatsu
PA-38	14:00~14:15	LiDAR-BASED HITCH CONTROL OF SOWING DEPTH FOR A GARLIC PLANTER UNDER LABORATORY CONDITIONS Jumyeong Lee, Yong-Hyun Kim, Chankeun Lee, Seokhyun Ahn, Hak-Jin Kim*
PA-39	14:15~14:30	SIMULATION STUDY OF REINFORCEMENT LEARNING-BASED STEERING CONTROL FOR AUTONOMOUS TRACTOR AT HEADLAND TURNS Chankeun Lee, Hak-Jin Kim*, Yong-Hyun Kim, Jumyeong Lee, Seokhyun Ahn
PA-40	14:30~14:45	EVALUATION OF AN ROI-BASED MODEL AND TWO-STAGE PIPELINE FOR TOMATO SURFACE DEFECT LOCALIZATION Hojun Kwon, Chanseok Ryu*, Changhyeok Park, Gangin Je, Hakchan Kim, Yeseong Kang, Dohyun An, Jian Kim
PA-41	14:45~15:00	MORPHOLOGY-INFORMED SPECTRAL-SPATIAL FUSION FOR LEAF WATER CONTENT ESTIMATION FROM HYPERSPECTRAL IMAGES Chi-Won Choi, Dae-Hyun Jung*

Room 322 Precision Agriculture Machinery and Systems 8 (PA-8)

Chair: Prof. Wen-Lin Chu (National Chung Hsing University)

PA-42	15:15~15:30	RAIL ENTRY TRAJECTORY ALGORITHM BASED ON FORWARD AND BACKWARD MOVEMENTS, CONSIDERING THE NAVIGATION SPACE OF A GREENHOUSE MOBILE ROBOT Ji Won Choi, Soo Been Cho, Jung-sang Yoo, Seung-Hwan Yang*
PA-43	15:30~15:45	DEVELOPMENT OF AN UNKNOWN OBJECT DETECTION ALGORITHM FOR ORCHARD ROBOTS USING A MONOCULAR RGB CAMERA Seokhyun Ahn, Yong-Hyun Kim, Jumyeong Lee, Chankeun Lee, Hak-Jin Kim*
PA-44	15:45~16:00	DEEP REINFORCEMENT LEARNING-BASED ACTIVE SUSPENSION CONTROL FOR BODY LEVELING OF AN AGRICULTURAL MOBILE PLATFORM Heonsoo Choi, Hyunggil Hong, Haeyong Yun, Yongjun Cho*
PA-45	16:00~16:15	FEASIBILITY OF BURIED CROP DETECTION USING PROXIMAL GAMMA-RAY SPECTROSCOPY Bum-Seok Park, Jin-Ho Son, Ju-Hee Lee, Won-Yeol Choi, Young-June An, Seo-Eun Lee, Dae-Wook Kwon, Hyung-Gyu Park, Yu-Shin Ha*
PA-46	16:15~16:30	DEVELOPMENT OF AN INDOOR-OUTDOOR AUTONOMOUS PATROL ROBOT FOR LIVESTOCK FACILITIES Ayumu NAKASHIMA*, Yamato Sakurai, Sutan Muhamad Sadam Awal, Dong Thanh PHAM, Takashi OKAYASU, Muneshi MITUOKA

Room 323 Precision Agriculture Machinery and Systems 9 (PA-9)

Chair: Prof. Chen-Kang Huang (National Taiwan University)

PA-47	13:30~13:45	NATIONAL-SCALE PARCEL GEOMETRY AND FIDELITY EVALUATION OF ISOXML PRESCRIPTION MAPS FOR KOREAN FIELDS Yi-Seo Min, Du-Han Kim, Wan-Soo Kim*
PA-48	13:45~14:00	EFFECTS OF ANALYSIS REGION AND CANOPY HEIGHT ON LEAF AREA ESTIMATION IN PLANAR-CANOPY APPLE TREES Je-Min Park, Yeong Hyeon Shin, Muhammad Amjad, Hyeon-Soo Kim, Woo-Jae Cho*
PA-49	14:00~14:15	ISO 11783 PRESCRIPTION MAP GENERATION FROM WEED DISTRIBUTION AND VIRTUAL VERIFICATION FOR SPRAYING Nayoung Kim, Changho Yun, Yeseong Kang, Deokheung Kim, Xiongzhe Han*
PA-50	14:15~14:30	AN RGB-D VISION AND DIGITAL-TWIN FRAMEWORK FOR DUAL-ARM COOPERATIVE HARVESTING OF OCCLUDED STRAWBERRIES Chen-En Lee, Chung-Liang Chang*
PA-51	14:30~14:45	RICE HILL DETECTION AND INDIVIDUAL RICE GROWTH MAPPING USING UAV IMAGERY Doan Le Cong, Gyujin Jang, Hak-Jin Kim*
PA-52	14:45~15:00	UAV-BASED ESTIMATION OF SOIL WATER CONTENT UNDER DIFFERENT SURFACE ROUGHNESS CONDITIONS USING RGB AND NIR IMAGERY Jaehun Lee, Jaesung Park*, Minjoo Kim, Seokyung Park, Hyeonjun Hwang

Room 324 AI and Information Processing 5 (AI-5)

Chair: Prof. Chang-Seop Shin (Chungbuk National University)

AI-24	13:30~13:45	CONTEXTUALIZING CNN ATTRIBUTION MAPS WITH IMAGE-DERIVED DESCRIPTORS IN MEDICINAL PLANT SEED CLASSIFICATION Su-Min Chin, Yea-Jin Park, Dae-Hyun Jung*
AI-25	13:45~14:00	DEEP LEARNING-BASED WAVELENGTH SELECTION FOR MULTISPECTRAL SENSING OF FOREST FUEL MOISTURE CONTENT Seung Woo Chun, Hong Gu Lee, Woo Hyeong Yu, Jeong Yong Shin, Jeong Woo Han, Woon Tak Han, Giyoung Kim, Sujung Ahn, Changyeun Mo*
AI-26	14:00~14:15	DEVELOPMENT OF A YOLO-SAM-BASED PIPELINE FOR STRAWBERRY LEAF EXTRACTION AND DISEASE SYMPTOM SYNTHESIS Soo Been Cho, Ji Won Choi, Jung-sang Yoo, Jung Hyun Lee, Seung-Hwan Yang*
AI-27	14:15~14:30	REAL-TIME OPEN-VOCABULARY 3D OCCUPANCY PREDICTION FOR AUTONOMOUS AGRICULTURAL MACHINERY Minwoo Kim, Sanghyeok Choi, Taehyun Jung, Gyeongmin Kang, Woosang Jeon, Taehyeong Kim*
AI-28	14:30~14:45	AUTOMATIC GENERATION OF THREE-DIMENSIONAL CUCUMBER CANOPY SCENES WITH HETEROGENEOUS LEAF SHAPES Tatsuki Nishimura, Dong Thanh Pham, Muneshi Mitsuoka, Daisuke Yasutake, Takenori Ozaki, Seji Koga, Yasumaru Hirai, Takashi Okayasu*
AI-29	14:45~15:00	RANKING-BASED LOSS FUNCTIONS FOR DEEP LEARNING PREDICTION OF POST-BLENDING COFFEE SENSORY ATTRIBUTES Chih-Yun Tsai, Yu-Tang Chang, Shu-Ping Hung, Chia-Hung Peng, Chun-Ming Lu, Shih-Fang Chen*

Room 324 AI and Information Processing 6 (AI-6)

Chair: Prof. Chang-Seop Shin (Chungbuk National University)

AI-30	15:15~15:30	AI-BASED EARLY DETECTION OF VISUALLY SIMILAR TOMATO DISEASES AND DROUGHT: COMPARISON OF BIOIMPEDANCE SENSING AND RGB IMAGING Yejin Kim, Daesik Son, Kyuseok Yang, Yulim Park, Dhayanti Makyorukty, Junseung Bae, Chanwoo Park, Soo Chung*
AI-31	15:30~15:45	IMPROVED KEYPOINT ESTIMATION USING A MULTI-TASK YOLO MODEL FOR WEED RECOGNITION IN GARLIC FIELDS Sohyeon Kang, Junghwa Park, Seokyung Park, Minjoo Kim, Yeonsoo Kim, Jaesung Park*
AI-32	15:45~16:00	DEVELOPMENT OF INTELLIGENT ROSE GROWTH MONITORING SYSTEM USING DEEP LEARNING AND BUD TRACKING Yu-Shan Wang, Wei-Ling Chen, Hsing-Ying Chung, Shih-Fang Chen*
AI-33	16:00~16:15	EVALUATION OF STRATEGIES TO IMPROVE INTERANNUAL TRANSFERABILITY OF UAV-BASED MULTISPECTRAL PEPPER PLANT HEIGHT MODELS Gangin Je, Chanseok Ryu*, Changhyeok Park, Hojun Kwon, Hakchan Kim, Yeseong Kang, Dohyun An, Jian Kim
AI-34	16:15~16:30	INTEGRATED DEEP LEARNING SYSTEM FOR ORAL CANCER SCREENING, RISK STRATIFICATION, AND IMAGE QUALITY ASSURANCE Jing-Han Jang, Cheng-Ying Chou*, Shyh-Jye Chen, Jang-Jaer Lee, Ling-Ying Wei, Ting-Yi Chen

Room 325 Field Machinery and Systems 3 (FM-3)

Chair: Prof. Jooseon Oh (Chonnam National University)

FM-14	13:30~13:45	MULTIVARIATE MOBILITY ANALYSIS OF LUNAR ROVER WHEELS USING NUMERICAL METHOD UNDER LUNAR GRAVITY Moo-Young Oh, Ju-Hyeon Ahn, Dan-A Kim, Se-Hee Park, Ji-Tae Kim*
FM-15	13:45~14:00	DEVELOPMENT OF AN EEPA-BASED DEM MODEL FOR PREDICTING CULTIVATOR-SWEEP FORCES UNDER DIFFERENT SOIL WATER CONTENTS Dae-Wi Jeong, Min-Seung Kim, Se-O Choi, Shin-Young Noh, Ye-Na Lee, Yeon-Soo Kim*, Jae-Sung Park, Yong-Joo Kim
FM-16	14:00~14:15	TRACTOR OVERTURNING-PREVENTION CONTROL USING MACHINE LEARNING TO ESTIMATE THE CENTRE OF MASS Hideo Tamashiro, Yuya Aoyagi*, Takeshi Shikanai, Masami Matsui, Shuto Ohara
FM-17	14:15~14:30	EVALUATION OF A NEW TWO-ROW CULTIVATION SYSTEM AND MECHANIZATION FOR SPRING POTATO PRODUCTION Kilkyu Oh, Seungmin Lee, Ki Yong Lee*
FM-18	14:30~14:45	A CONTINUOUS MULTI-TARGET TOMATO HARVESTING STRATEGY WITH COARSE-TO-FINE PEDICEL-GUIDED MANIPULATION Hao-Cheng Zuo, Bo-Jhih Chang, Ping-Lang Yen*
FM-19	14:45~15:00	VIBRATION ANALYSIS OF A MECANUM WHEEL AGRICULTURAL TRANSPORT PLATFORM Yeonsong Lee, Minkyo Kong, Sung-Bo Shim*

Room 325 Field Machinery and Systems 4 (FM-4)

Chair: Jooseon Oh (Chonnam National University)

FM-20	15:15~15:30	DEVELOPMENT OF A DEM-MBD CO-SIMULATION MODEL FOR PREDICTION PICKUP UNIT LOAD IN A 103KW-CLASS ROUND BALER Min-Seung Kim, Dae-Wi Jeong, Se-O Choi, Shin-Young Noh, Ye-Na Lee, Yeon-Soo Kim*, Yong-Joo Kim
FM-21	15:30~15:45	EXPERIMENTAL AND THEORETICAL ANALYSIS OF SINGLE TIRE SOIL THRUST UNDER DIFFERENT NORMAL LOADS Se-O Choi, Min-Seung Kim, Dae-Wi Jeong, Shin-Young Noh, Ye-NaLee, Yeon-Soo Kim*, Yong-Joo Kim
FM-22	15:45~16:00	DEM-BASED PERFORMANCE EVALUATION OF A GARLIC CLOVE SORTER FOR MACHINE PLANTING Won-Yeol Choi, Hyung-Gyu Park, Jinho Son, Ju-Hee Lee, Bum-seok Park, Young-June An, Seo-Eun Lee, Dae-Wook Kwon, Yushin Ha*
FM-23	16:00~16:15	HIERARCHICAL GREENHOUSE NAVIGATION USING POINT-LIO LOCALIZATION AND SEMANTIC AISLE FOLLOWING Hao-Cheng Zuo, Bo-Jhih Chang, Ping-Lang Yen*
FM-24	16:15~16:30	FIELD RELIABILITY EVALUATION OF A SELF-BUILT IOT MONITORING DEVICE FOR APPLE COLD STORAGE Joon-Mo Kang, Hyuck-Joo Kim*

Room 326 Smart Farm Systems and Renewable Energy 3 (SF-3)

Chair: Prof. Soo Chung (Seoul National University)

SF-11	13:30~13:45	SENSOR PLACEMENT STRATEGY FOR ENVIRONMENTAL MONITORING IN VERTICAL FARMS BASED ON SPATIAL, VERTICAL, AND TEMPORAL VARIABILITY Arnab Majumder, Md Razob Ali, Gusti Ayu Putri Mei Ulianti, Md Nasim Reza, Choa Mun Yun, Sun-Ok Chung*
SF-12	13:45~14:00	WATER STRESS VARIABILITY MAPPING BY GROWTH STAGE USING THERMAL VIDEO PROCESSING FOR CABBAGE GROWN IN GREENHOUSE Md Nasim Reza, Ezatullah Zakir, Miao MiaoTu, Cholet Nyangoma Atulinda, Su Young Lee, Sun-Ok Chung*
SF-13	14:00~14:15	USER-DEFINED MODEL COMPONENT DEVELOPMENT IN TRNSYS 18 FOR A DYNAMIC ENERGY SIMULATION: CASE STUDY OF A PCM-IN-CONTAINER Qazeem Opeyemi Ogunlowo, Seung-hun Lee, Chan-min Kim, Hee-Woong Seok, Sun-hyoung Lee, Su-been Ahn, Han Kim, Jin-seo Choi, Yun-Jeong Lee, Yoon-Kyu Hur, Jun-seop Mun, Hyeon-chae Kim, Rack-woo Kim*
SF-14	14:15~14:30	ROBOTIC MULTI-VIEW RGB PHENOTYPING OF STRAWBERRY PETIOLE LENGTH WITHOUT DEPTH SENSING Min-Woo Kim, Dae-Hyun Jung*
SF-15	14:30~14:45	3D RECONSTRUCTION OF GREENHOUSE CROPS: FROM SINGLE-CAMERA RGB-D MAPPING TO LIDAR-CAMERA INTEGRATION Xianghui Xin, Sungjay Kim, Gyumin Kim, Yeongjun Go, Yudha Putra Arisandy, Seongmi Sun, Ghiseok Kim*
SF-16	14:45~15:00	FEASIBILITY EVALUATION OF A LABORATORY-DEVELOPED EMBEDDED EC AND PH ANALYZER FOR HYDROPONIC NUTRIENT SOLUTIONS Minki Kang, Hak-Jin Kim*, Yuna Kwon, Joonhwan Kim

Room 326 Smart Farm Systems and Renewable Energy 4 (SF–4)

Chair: Prof. Soo Chung (Seoul National University)

SF–17	15:15~15:30	THERMAL PERFORMANCE OF A TRACKING LINEAR FRESNEL LENS SYSTEM WITH AN EVACUATED TUBE COLLECTOR Seung–Hyeon Cheon, Byeong–Eun Moon*
SF–18	15:30~15:45	DEVELOPMENT OF A 3D CLINOSTAT PLATFORM FOR GROUND–BASED SIMULATED MICROGRAVITY RESEARCH IN AGRICULTURAL BIOSCIENCES Uik Lee, Yeongjun Go, Jiwon Ryu, Ghiseok Kim*
SF–19	15:45~16:00	OPTIMAL BASELINE DETERMINATION FOR STEREO VISION–BASED PLANT HEIGHT MEASUREMENT OF PEPPER SEEDLING TRAYS AT A FIXED CAMERA HEIGHT Gunhui Park, Junghwa Park, Sohyeon Kang, Minjoo Kim, Jaesung Park*

Room 121 Bio-processing Engineering 1 (BP-1)

Chair: Prof. Kyoung-Je Jang (Gyeongsang National University)

BP-01	13:30~13:45	HOLLOW FIBER MEMBRANE BASED VACUUM MEMBRANE DISTILLATION FOR AMMONIA NITROGEN REMOVAL Megha Pramod, Bo-Sheng Wu, Wu-Yang Sean*
BP-02	13:45~14:00	GRAVITY-ASSISTED TWO-STEP CRISPR-CAS12A SYSTEM FOR RAPID MOLECULAR DETECTION Shauqi Abda'i Lubis, Jyh Jian Chen*
BP-03	14:00~14:15	EFFECTS OF HIGH-VOLTAGE PULSE PRETREATMENT ON THE SURFACE AND STRUCTURAL CHARACTERISTICS OF RICE STRAW Wu-Huan Hsu*, Tsung-Chun Lin, Yun-Sheng Lu
BP-04	14:15~14:30	SELF-OXYGENATING SCAFFOLDS MODULATE HYPOXIC RESILIENCE AND EPIGENETICALLY GUIDE MUSCLE DEVELOPMENT Woobin Choi, Yuseung Choi, Wooseok Jung, Kanghee Han, Daeun Jung, Sangbae Park*
BP-05	14:30~14:45	REUSABLE AGAR HYDROGEL BEADS FOR CONTROLLED NUTRIENT DELIVERY IN HYDROPONIC SYSTEMS Yeonseo Kim, Seyeong Heo, Hojin Wang, Sunho Park*
BP-06	14:45~15:00	ALGINATE-ZEIN CORE-SHELL MICROCAPSULES FOR SUSTAINED BACTERIA DELIVERY IN WILDFIRE-AFFECTED SOIL Yeonseo Kim, Seyeong Heo, Hojin Wang, Sunho Park*

Room 121 Bio-processing Engineering 2 (BP-2)

Chair: Prof. Kyoung-Je Jang (Gyeongsang National University)

BP-07	15:15~15:30	DEVELOPMENT AND VALIDATION OF A STRAWBERRY-SHAPED SENSOR FOR MEASURING FRUIT VIBRATION CHARACTERISTICS Taiki Arao, Toyohiro Kato, Muneshi Mitsuoka, Masahiro Misumi, Takeshi Kuroyanagi, Takashi Okayasu*
BP-08	15:30~15:45	EFFECTS OF GELATIN NANOPARTICLES AND UREA, APPLIED INDIVIDUALLY OR IN COMBINATION, ON SEEDLING GROWTH OF ARABIDOPSIS THALIANA AND LETTUCE Donggyu Du, Hyojin Moon, Shinyull Lee, Woochan Kim, Dream Kim, Jangho Kim*
BP-09	15:45~16:00	EXTRUSION-BASED 3D BIOPRINTING OF SOFT CARROT CALLUS USING AN ALGINATE-LAPONITE-METHYLCELLULOSE HYDROGEL AND QUANTIFICATION OF SECONDARY METABOLITES Susmita Ghosh, Yeong-Jin Choi*, Hee-Gyeong Yi*

ISMAB2026 Poster Presentation (10/22 (Thu) 10:00~12:00, Hall 5A)

Poster 1 AI and Information Processing

AI-P01 ESTIMATION OF RICE ABOVEGROUND WEIGHT FROM OVERHEAD 2D IMAGES
Byeonghan Lee*, Sangyeob Lee, Su-jin Jeong, Deok-Gyeong Seong, Jeong-Ho Shin, Gil-Seok Park

AI-P02 AN INTELLIGENT PASSION FRUIT DISEASE DIAGNOSIS SYSTEM USING ADVANCED YOLO ARCHITECTURES AND TRANSFER LEARNING
Chuan-Yi Chang, Chao-Wang Young*

AI-P03 A METHOD FOR GROUND ELEVATION MEASUREMENT USING MOVING BASE RTK AND TILT COMPENSATION FOR PADDY FIELD LEVELING
Shanon Yamaguchi, Tatsuro Taniyama, Kyosuke Nishizawa, Hiroshi Iwata*, Ken'ichi Yamaguchi, Yuki Ashihara

AI-P04 DECOUPLING SUBSTRATE AND SAMPLING DIRECTION IN NON-SPHERICAL COMPOUND EYES
You-Rong Zheng, Shang-Jui Fu, En-Cheng Yang, Cheng-Ying Chou*

AI-P05 EVALUATION OF eDNA ANALYSIS PIPELINES TO IDENTIFY FRESHWATER FISH SPECIES
Chao-You Sung, Zong-Yan Liu, Sheng-Kai Hsu, Jose A. Andres, Chien-Yu Chen*

AI-P06 PRELIMINARY STUDY ON IMPROVING THE COMPUTATIONAL EFFICIENCY OF A VIEWPOINT PROPOSAL SYSTEM FOR BUD DETECTION USING A REDUNDANT ROBOT ARM
Hiroyuki Terai*, Shinsuke Yasukawa

AI-P07 COMPARATIVE ANALYSIS OF INSTANCE SEGMENTATION MODELS FOR NET SEGMENTATION IN MELONS
Dong-Han Lee, Seongmin Lee, Jeong Gyun Kang, Jun-Woo Park, Ho-seung Jang, Jayeong Paek*

AI-P08 IMPROVING ROBUSTNESS OF YOLO11-BASED MELON DETECTION USING OCCLUSION AND ILLUMINATION DATA AUGMENTATION
Seongho Lee, Donghan Lee, Jayeong Paek, Jeong Gyun Kang, Jun-Woo Park, Ho-seung Jang, Manjung Kim*

AI-P09 DEVELOPMENT OF AN OPEN-SOURCE AUTOMATIC TRACKING SYSTEM FOR STYLET-BEARING NEMATODES UNDER A MICROSCOPE
Atsuru Fujimoto*, Taisuke Ekino

AI-P10 ESTIMATING ANIMAL MOVEMENT PATHS USING MULTI-NODE INFRARED PYROELECTRIC SENSORS FOR WILDLIFE DAMAGE PREVENTION
Shota Sawada, Hiroshi Iwata*, Ken'ichi Yamaguchi

AI-P11 GENERALIZATION PERFORMANCE OF HYPERSPECTRAL IMAGING-BASED MODEL FOR MELON HARVEST-TIME PREDICTION
Seongmin Lee, Seongho Lee, Jeong Gyun Kang, Jun-Woo Park, Ho-seung Jang, Jayeong Paek*

AI-P12 LESION DETECTION AND DISEASE STAGE CLASSIFICATION IN STRAWBERRY AND TOMATO USING DEEP LEARNING
Tae-Hwi Lee, Yu-Jin Jeon, Dae-Hyun Jung*

AI-P13 WHY THE BEST MODEL CHANGES: IMAGE-BASED FRESH-WEIGHT ESTIMATION OF LETTUCE UNDER TRAINING–DEPLOYMENT SHIFTS
Ki-Su Park, Woo-Joo Choi, Myongkyoon Yang*

AI-P14 DATA-DRIVEN IDENTIFICATION OF THI THRESHOLDS FOR PRODUCTIVITY AND EGG GRADE DISTRIBUTION IN LAYING HENS
Leecheon Kim, Darae Kang*

AI-P15 DEEP LEARNING-BASED MODEL FOR OPTIMAL HARVEST STAGE IDENTIFICATION AND SIZE GRADING OF SHIITAKE MUSHROOM
Che-Wei Liu*, Chien-Ying Lee, Syuan-You Lin, Chi-Wei Liu, Yao-Chuan Tsai

AI-P16 COMPARING REAL-TIME INFERENCE PERFORMENCE AND ENERGY EFFICIENCY OF EDGE DEVICES FOR WEED DETECTION
Jae-Min Lee, Seung-Jin Jeong, Ryu-Gap Lim*

AI-P17 COMPARISON OF ENSEMBLE METHODS FOR GREENHOUSE TOMATO YIELD PREDICTION USING HETEROGENEOUS CROP MODELS
Woo Hyeok Jeong, Seung A Kim, Meoung Hun Lee*

AI-P18 A STUDY ON THE FEASIBILITY OF A STAND-ALONE SAP-FLOW SENSOR FOR PRECISION IRRIGATION
Muhammad Amjad, Yeong-Hyeon Shin, Je-Min Park, JinWoo Nam, Mi Young Lim, Ji Woong Bang, Myeongsuk Kim, Junyoung Park, Soo Chung, Woo-Jae Cho*

AI-P19 CANDIDATE-LEVEL RESCORING DETERMINES DETECTION PERFORMANCE UNDER SCARCE LESION ANNOTATION
Peng-Yuan Wu, Shyh-Jye Chen, Cheng-Ying Chou*

AI-P20 INTERPRETABLE HERBAL MEDICINE IMAGE CLASSIFICATION USING A CONCEPT BOTTLENECK MODEL
JIN-SEOK OH, Dae-Hyun Jung*

AI-P21 FORECASTING AFTERNOON GREENHOUSE SOLAR RADIATION WITH GK2A CLOUD OPTICAL THICKNESS AND DAY-AHEAD WEATHER FORECASTS
Hyein Lee, Su Yeon Lee, Joo Eun Lee, Joon Yong Kim*

AI-P22 ZERO-SHOT OPEN-VOCABULARY DETECTION WITH TRANSFER LEARNING FOR BLOSSOM-END ROT IDENTIFICATION IN A COMMERCIAL TOMATO GREENHOUSE
Hyein Lee, Young-Kyun Jang, Joon Yong Kim*

AI-P23 DEVELOPMENT OF AN ALGORITHM FOR PEPPER FRUIT AND FLOWER DETECTION AND COUNTING USING TWO-SIDED OBLIQUE UAV IMAGERY
Hyeonjun Lee, Taeyoung Woo, Dohyeon Jeong, Junyeong Kim, Dong-Wook Kim*

AI-P24 DEVELOPMENT OF A DEEP LEARNING-BASED METHOD FOR DETECTING SOYBEAN PLANTING GROUPS AND COUNTING PLANTS FROM UAV IMAGERY
Taeyoung Woo, Hyeonjun Lee, Junyeong Kim, Dohyeon Jeong, Dong-Wook Kim*

AI-P25 INDIVIDUAL-PLANT SPAD ESTIMATION IN FIELD-GROWN PEPPER USING UAV-DERIVED SPECTRAL, TEXTURAL, AND STRUCTURAL INFORMATION
Dohyeon Jeong, Hyeonjun Lee, Junyeong Kim, Taeyoung Woo, Dong-Wook Kim*

AI-P26 REGRESSION-BASED PREDICTION OF HUMAN AFFECTIVE CHANGES FROM INSECT SOUND MEL-SPECTROGRAMS
Junyeong Kim, Su Ji Jang, Hyeonjun Lee, Dohyeon Jeong, Taeyoung Woo, Dong-Wook Kim*

AI-P27 EFFECTS OF MARKER-HEIGHT VARIATION ON TRACTOR-IMPLEMENT RELATIVE POSE IN SIMULATED EXTERNAL AERIAL MEASUREMENT
Jaewoo Kim, Eun-Kuk Kim, Tae-Ho Han, Hyunggun Kim*

AI-P28 DEVELOPMENT OF POULTRY VOCAL MONITIORING SYSTEM FOR CHICKEN RESPIRATORY DISEASE DETECTION
Li-Yun Huang, Jun-Qian Zhu, Yao-Chuan Tsai*

AI-P29 INVESTIGATION OF PLANT STEM CELL REGENERATION USING DEEP LEARNING-BASED IMAGE PROCESSING
Kai-lun Liu*, Han Tang, Yao-Chuan Tsai

AI-P30 LLM AGENT-BASED CITRUS DISEASE AND PEST DIAGNOSIS USING FIELD IMAGING AND MICROFLUIDIC PCR
Yin-Hao Lai, I-Huai Lu, Li Chang[2], Ming-Chung Chiu[3], Ting-Hsuan Hung[2], Shiuh-Feng Shiao[3], Joe-Air Jiang*

AI-P31 COMPUTER VISION FOR BAT DETECTION AND TRACKING IN INFRARED-ILLUMINATED CAVE VIDEOS
Yu-Wei Chang*, Chen-Wei Liang

AI-P32 ANGULAR-MARGIN LEARNING FOR SPARSE-ENROLMENT CATTLE FACE RE-IDENTIFICATION: WITHIN-BREED REPLICATION AND BIDIRECTIONAL CROSS-DATASET EVALUATION
Jongho Park, Youngjun Na, Imjoung Choi, Sumin Seo, Joungho Lee, Youngjun Choi*, Jung Eek Son*

AI-P33 COMPARATIVE EVALUATION OF MACHINE LEARNING ALGORITHMS FOR PREDICTING WEEKLY YIELD OF HYDROPONIC CUCUMBER IN A SMART FARM
JongWon Park, kyeonghee Choi, Kyongeun Jeon, Heekyoung Lee, Soosang Hahm, Tae Hwan Kang*

AI-P34 BUILDING A MULTIMODAL HYPERSPECTRAL IMAGE DATASET FOR CHARACTERIZING PHYSIOLOGICAL DISORDERS IN SMART FARM-GROWN TOMATOES
JongWon Park, kyeonghee Choi, Kyongeun Jeon, Heekyoung Lee, Soosang Hahm, TaeHwan Kang*

AI-P35 FLOW MATCHING ENABLES HIGH-RESOLUTION TREE SKELETONIZATION FROM OCCLUDED POINT CLOUDS
Dayeon Yang, Chanyoung Ju*, Pyojin Kim

Poster 2 Bio-processing Engineering

BP-P01 GROWTH AND MORPHOLOGICAL RESPONSES OF *PYTHIUM ULTIMUM* UNDER SIMULATED MICROGRAVITY
Hyeon Tae Kim*, Jeong-In Choi, Si-joong Lee

BP-P02 A REPLACEABLE COMPOSITE DIELECTRIC FILM FORLOW-COSTPCB-BASED DIGITAL MICROFLUIDICS
Hung Pin Pan, Yen-Wen Lu*

BP-P03 ECO-FRIENDLY SUPERCRITICAL CO_2 EXTRACTION FOR VALUE-ADDED FUNCTIONAL INGREDIENTS FROM AHNFELTIOPSIS FLABELLIFORMIS
Yo Seph Lee, Jae Hyeok Choi, Sung Wan Park, Hoon Seonwoo*

BP-P04 SUSTAINABLE HIGH-THROUGHPUT 3D FOOD PRINTING VIA UPCYCLED SESAME MEAL ISOLATED PROTEIN INKS FOR PLANT BASED MEAT ANALOGUES
Yuseung Choi, Hyun-Su Choi, Hyunjin Lee, Woobin Choi, Kanghee Han, Sungchul Shin, Yong-Ro Kim, Sangbae Park*

BP-P05 EFFECT OF UREA LOADING METHOD AND DRYING CONDITION ON ALGINATE-BASED SLOW-RELEASEING FERTILIZER BEADS
Jaehyeok Choi, Yoseph Lee, Sungwan Park, Jae Woon Lim, Hoon Seonwoo*

BP-P06 EFFECTS OF STARCH RETROGRADATION ON REHYDRATABLE, EDIBLE SCAFFOLD FOR CULTURED MEAT
Yeonggeol Hong, Agatha Harta Muliani, Kyoung-Je Jang*

BP-P07 MITIGATING EXPERIMENTAL DATA LIMITATIONS IN MICROBIAL CELL FACTORY RESEARCH VIA PHYSICS-INFORMED MACHINE LEARNING
Woo Kyung Lee, Dohyeok Choi, Kwang Young Park, Hee Taek Kim, Wang-Hee Lee*

BP-P08 PHOTOSYNTHETIC SELF-OXYGENATING CULTURED MEAT VIA COAXIAL BIOPRINTING OF CHLORELLA-MUSCLE CELL BIOINK
Kanghee Han, Yuseung Choi, Daeun Jung, Woobin Choi, Woo Seok Jung, Sangbae Park*

Poster 3 Field Machinery and Systems

FM-P01 FABRICATION AND FACTORIAL TESTING OF A PULLING TEST RIG FOR A SELF-PROPELLED RADISH HARVESTER
Seok-Jun Hong, Il-Su Choi*, Young-Hwa Kim, Jea-Keun Woo, Chun-Gu Lee, Kyu-Ho Lee, Yun-Jeong Yang, Si-Yun Kim, Myeong-Hee Lee, Kyung-Sik Choi

FM-P02 COMPARATIVE EVALUATION OF THE TORSIONAL PERFORMANCE OF STEEL WIRE CLAMPS AND STEEL PLATE CLAMPS FOR GALVANIZED STEEL TUBE CONNECTIONS IN GREENHOUSE STRUCTURES
Cheng-Chang Lien, Yu-Min Wang*, Zong-Xian Xie, Jun-Han Mei

FM-P03 EFFECTS OF SHORT-TERM NATURAL AGING ON THE MECHANICAL PROPERTIES OF GREENHOUSE PLASTIC FILMS
Cheng-Chang Lien, Po-Yu Zeng*, Zong-Xian Xie, Jun-Han Mei

FM-P04 DEVELOPMENT OF VIRTUAL UPLAND FIELD ENVIRONMENTS WITH SPATIALLY VARYING FRICTION FOR TRACTOR DRIVING SIMULATION
Eun-Chae Roh, Kyung-Do Kwon, Chang-Ho Yun, Chang-Ju Yang*

FM-P05 A SURVEY-BASED ANALYSIS ON HEAT-ILLNESS PREVENTION COMPLIANCE AMONG FLORICULTURE FARMERS
Joon-Hyung Park, Moon-Kyeong Jang, Chan-Young Lee, Ju-Seok Nam*

FM-P06 DEVELOPMENT AND PERFORMANCE EVALUATION OF AN ELECTRIC AGRICULTURAL TRANSPORTER
Cheng-Chang Lien*, Min-Jie Li, Zong-Xian Xie, Jun-Han Mei

FM-P07 DEVELOPMENT OF A SMART SPRINKLER WITH VARIABLE WATER FLOW DEPENDING ON THE WATER SUPPLY LOCATION(1) (WATER VOLUME CONTROL USING AN ELECTRONIC VALVE)
Jin Hyun Kim, Seol Ha Kim, Jeong Hun Kim, Won Hyeong Lee, Seok Hyun Seo, Dong Seok Kim, Sang Hun Lee*

FM-P08 DEVELOPMENT OF A SMART SPRINKLER WITH VARIABLE WATER FLOW DEPENDING ON THE WATER SUPPLY LOCATION(2) (WATER VOLUME CONTROL USING AN INVERTER)
Jin Hyun Kim, Seol Ha Kim, Jeong Hun Kim, Won Hyeong Lee, Seok Hyun Seo, Dong Seok Kim, Sang Hun Lee*

FM-P09 PRELIMINARY FIELD EVALUATION OF A MODEL PREDICTIVE CONTROL SYSTEM FOR ROTARY TILLAGE BASED ON SOIL PULVERIZATION RATIO
Hirotaka Tsuchikawa*, Shintaro Noda, Keita Kurashiki, Hidefumi Saito, Yuka Nakano

FM-P10 KINEMATIC ACCELERATION FOR BONDED-PARTICLE DISCRETE ELEMENT SIMULATION OF ROTARY CORE DRILLING
Joon-Seo Kim, Sang-Wook Park, Seung-Yeon Lee, Tae-Kyeong Yeu, Ji-Tae Kim*

FM-P11 EFFECT OF UNDERCARRIAGE CONFIGURATION ON THE MOBILITY OF DEEP-SEA TRACKED VEHICLES OVER HYDROTHERMAL VENT-FIELD TERRAIN
Moo-Young Oh, Ju-Hyeon An, Dan-A Kim, Se-Hee Park, Tae-Kyeong Yeu*, Ji-Tae Kim

FM-P12 GROWTH CHARACTERISTICS OF LEAFY VEGETABLE SEEDLINGS FOR ESTABLISHING SUITABLE SIZE CRITERIA FOR MECHANICAL TRANSPLANTING
Inseok Hwang, Changseop Shin*, Donggyu Kim, Dohyun Ahn

FM-P13 DEM SOIL PARAMETER CALIBRATION USING ANGLE OF REPOSE AND CONE PENETRATION TEST
Donggyu Kim, Sebin Jeong, Changseop Shin*

FM-P14 ENGINE SAFETY CONTROL MODULE FOR BACKPACK BRUSH CUTTERS USING PPE WEAR AND TILT SIGNALS
Young-Tae Yun*, Jeong-Min Lee, Seok-Cheol Yu, Jae-Seung Noh

FM-P15 ANALYSIS OF ISO 18497 SAFETY REQUIREMENTS FOR OPEN-FIELD AGRICULTURAL ENVIRONMENTS IN THE REPUBLIC OF KOREA
Seung-hun Lee, Qazeem Opeyemi Ogunlowo, Chan-min Kim, Hee-Woong Seok, Sun-hyoung Lee, Su-been Ahn, Han Kim, Jin-seo Choi, Yun-Jeong Lee, Yoon-Kyu Hur, Jun-seop Mun, Hyeon-chae Kim, Rack-woo Kim*

FM-P16 DESIGN AND PRELIMINARY EVALUATION OF A MULTI-CHANNEL PNEUMATIC STRIKER FOR GARLIC HARVESTER DISCHARGE
Kyu-Ho Lee, Chun-Gu Lee*, Il-Su Choi, Seok-Jun Hong, Yeong-Hwa Kim, Jea-Keun Woo, Yun-Jeong Yang

FM-P17 CHARACTERIZATION OF THE DASHING BEHAVIOUR OF A WALKING TRACTOR CONSIDERING OPERATOR RESPONSE
Shuto Ohara, Yuya Aoyagi*, Takeshi Shikanai, Masami Matsui, HideoTamashiro

FM-P18 A STUDY ON THE PREDICTION OF DRAFT AND VERTICAL FORCES DURING MOULDBOARD PLOUGHING USING MACHINE LEARNING
Shin-Young Noh, Dae-Wi Jeong, Min-Seung Kim, Se-O Choi, Ye-Na Lee, Yeon-Soo Kim*, Jae-Sung Park, Yong-Joo Kim, Sang-Dae Lee, Jeong-Gil Kim, Seung-Je Cho

FM-P19 FATIGUE BEHAVIOR ANALYSIS AND LIFE ASSESSMENT OF A SCALED HOLLOW CYLINDICAL RUBBER FENDER UNDER FULLY COMPRESSIVE LOADING
Yung-Chuan Chiou*, Po-Yu Weng, Bo-Jyun Lin

FM-P20 COMPARATIVE ANALYSIS OF SWEET POTATO ESTABLISHMENT RATES IN CONVERTED PADDY AND UPLAND FIELDS FOR THE DEVELOPMENT OF A STANDARD CULTIVATION MODEL
Jinho Won, Sun-Bin Min, Jeongju Chae, Yongjin Cho, Dae Cheol Kim*

FM-P21 MAPPING SOIL HARDNESS USING UNMANNED PLOUGHING WORKINGDATA
Adeer Maluk Jacob Ajak, Atsuru Fujimoto*

FM-P22 ANALYSIS OF SPRAY CHARACTERISTICS OF A SPEED SPRAYER ACCORDING TO NOZZLE TYPE AND AIRFLOW RATE

Yun-Jeong Yang, Il-Su Choi, Young-Hwa Kim, Jea-Keun Woo, Seok-Jun Hong, Hyun-Ho Noh, Chun-Gu Lee*

FM-P23 EFFECT OF GARLIC CLOVE PLANTING ANGLE ON GROWTH AND YIELD UNDER MECHANICAL PLANTING

Hye-Min Oh*, Woo-Young Cho, Young-Jun You, Hye-Jeong Jeong, Yu-Shin Ha, Mun-Jung Lee

FM-P24 DESIGN AND DEVELOPMENT OF AN ELECTRIC PLATFORM-BASED INTELLIGENT GARLIC SCAPE REMOVAL SYSTEM

Tae Wook Kang*, Chang Shoo Kim, Seung Heon Cho, Jungsil Kim

FM-P25 THEORETICAL STRESS ANALYSIS OF A 55-KW SELF-PROPELLED SWEET POTATO HARVESTER

Sakib Robin, Md Nasim Reza, Ezatullah Zakir, Karma Osama Sayedlsmaail, Jong Won Lee, Il-Su Choi, Sun-Ok Chung*

FM-P26 DESIGN OF A FULL-BOOM SHIELD AND SPRAY RECOVERY SYSTEM FOR DRIFT REDUCTION

Chun-Gu Lee, Ilsu Choi, Younghwa Kim, Jea-keun Woo, Kyu-ho Lee, Siyun Kim, Seokjoon Hong, Jeekeun Lee, Dong Hyeon Kang

Poster 4 Post-harvest and Food Processing

PH-P01 EFFECTS OF PRE-FREEZING ON POLYPHENOL CONTENT AND DPPH RADICAL SCAVENGING ACTIVITY IN MICROWAVE-VACUUM DRIED APPLE
Akari Saito, Takahiro Orikasa*, Shoji Koide, Yasumasa Ando

PH-P02 ROOM-TEMPERATURE ETHYLENE GAS SENSOR BASED ON GRAPHENE OXIDE AND ZINC OXIDE
Kuan-Ju Chen*, Yao-Chuan Tsai

PH-P03 EFFECTS OF MICROWAVE-VACUUM DRYING PROCESSING ON THE PHYSICAL PROPERTIES OF BANANA CHIPS
Jan Jeng Huang, Jia FangLi*

PH-P04 DEVELOPMENT OF AN IMPELLER FOR BROWN RICE MACHINE SPECIFICALLY FOR MEDIUM GRAIN RICE
Seok-Jin Lee, Sun-young Lee Jong-seung Cho, Ji-Ae Lee, Kyung-Soo Kim, Sung-Ha Hong, Hwang-Gye Lee, Jin-Hyun Kim, Tae-Wook Kim*

PH-P05 ESTIMATION OF ADDED SORBITOL CONCENTRATION IN CARROT USING RAMAN SPECTROSCOPY
Shiori Furukawa, Takahisa Nishizu, Teppei Imaizumi*

PH-P06 EFFECT OF SUB-ZERO TEMPERATURE STORAGE ON PHYSICOCHEMICAL PROPERTIES AND MICROBIOLOGICAL QUALITY OF FRESH-CUT YELLOW BELL PEPPERS
Shuri Takahashi, Takahiro Orikasa, Shoji Koide*

PH-P07 INFLUENCE OF BOTTLE-DERIVED SIGNALS ON RAMAN SPECTROSCOPIC AUTHENTICATION OF JAPANESE WHISKY
Masato Yoshisako, Mihir Kumar Purkait, Takahisa Nishizu, Teppei Imaizumi*

PH-P08 ANTIOXIDANT PROPERTIES OF COFFEE SUBSTITUTES MADE FROM GERMINATED LEGUMES AND CEREALS
Reina Tanaka, Takahisa Nishizu, Nijolė Vaitkevičienė, Teppei Imaizumi*

PH-P09 METABOLITE PROFILES AT HARVEST AS POTENTIAL INDICATORS OF POSTHARVEST SHELF LIFE IN BROCCOLI SPROUTS UNDER DIFFERENT CULTIVATION TEMPERATURES
Ayana Kawabata, Kohei Nakano*

PH-P10 DEVELOPMENT AND COMPARATIVE EVALUATION OF SEGMENTATION MODELS FOR SURFACE DEFECT DETECTION IN MULTIPLE FRUIT TYPES
Seokha Hwang, Harin Jang, Kim Min hyun, Huynh Cao The Cuong, Donghyeon Seong, Ghiseok Kim*

PH-P11 EFFECTS OF HIGH-PRESSURE PRETREATMENT ON CHEMICAL COMPOSITION OF ARABICA COFFEE BEANS
Nisa Vinka Nurul Hayati, Manami Yamada, Teppeilmaizumi*, Takahisa Nishizu

PH-P12 FUNDAMENTAL STUDY ON NON-DESTRUCTIVE DETECTION FOR CRYSTALLIZED SYMPTOMS OF TARO WITH X-RAY IMAGE

Noriko Takahashi*, Keiji Konagaya, Takumi Tachibana, Kazunori Ninomiya, Yuri Shimamoto, Nina Alissa Favergeat, Ziwei Zheng, Naoshi Kondo

PH-P13 EFFECTS OF FRUIT CANOPY POSITION IN THE TREE ON WATER LOSS AND CUTICLE STRUCTURE OF 'KAWACHI BANKAN' FRUIT DURING STORAGE

Tomoka Ida, Keiji Konagaya, Nanako Saito, Noriko Takahashi*

PH-P14 DEVELOPMENT OF A DEEP LEARNING MODEL FOR AUTOMATIC FIVE-GRADE QUALITY CLASSIFICATION OF PEELED GARLIC USING MULTI-VIEW IMAGES

Hyeon-Chae Yu, Saet-Byeol Park, Ji-Hee Han, Seong Min Kim*

PH-P15 CLASSIFICATION AND SEGMENTATION OF EXTERNAL DEFECTS IN ORIENTAL MELON USING RGB IMAGIN AND DEEP LEARNING

Saet-Byeol Park, Hyeon-Chae Yu*, Ji-Hee Han

PH-P16 IMPACT ON ELECTRICAL AND PHYSICOCHEMICAL PROPERTIES OF Ag/TiO_2 NANOCOMPOSITE-ASSISTED VACUUM-IMPREGNATED CARROT

Sourav Kumar Singha, Takahisa Nishizu, Teppei Imaizumi*

PH-P17 STUDY ON KEY FACTORS BY MOISTURE CONTENT TO IMPROVE CLEANING EFFICIENCY OF DOMESTIC WHEAT

Eun-Jin Kwak, Dong-Gwan Shin, Hoon Kim, Jae-Woong Han*

PH-P18 ANALYSIS OF DRYING CHARACTERISTICS OF A CIRCULATING CROSS-FLOW GRAIN DRYER FOR DOMESTIC WHEAT USING SIMULATION

Woo-Jin Choi, Dong-Gwan Shin, Hoon Kim, Jae-Woong Han*

PH-P19 DEVELOPMENT OF AN OPERATION SCHEDULING PROGRAM FOR DOMESTIC WHEAT DRYING AND STORAGE FACILITIES

Jun-Yeong Kim, Dong-Gwan Shin, Hoon Kim, Jae-Woong Han*

PH-P20 DEVELOPMENT OF EMBEDDED DYNAMIC QR SCANNER AND IOT SENSOR NODES FOR AGRICULTURAL PRODUCT TRACEABILITY

Sung-Min Han, Hyo-Eun Lee, Su-Hyeon Lim, Dong-Soo Ryu, Seong-Min Kim*

PH-P21 EFFECTS OF POST-HARVEST DRYING DELAY ON QUALITY CHANGES IN DOMESTIC WHEAT

Soo-In Kim, Dong-Gwan Shin, Hoon Kim, Jae-Woong Han*

PH-P22 DEEP LEARNING-BASED JUICE EXTRACTION RATE PREDICTION AND SPEED OPTIMIZATION FOR A TWIN-SCREW JUICER USING SENSOR TIME-SERIES DATA

Jae-Min Jung, Dong-Hyeon Kim*, Tae-Hyeon Kim, Wang-Hee Lee*

Poster 5 Precision Agriculture Machinery and Systems

PA-P01 A STEREO VISION AND 3D POINT CLOUD-BASED BREEDING ASSISTIVE SYSTEM FOR SWEET POTATO SHOOT PHENOTYPING
Ting-Han Lin*, Shang-Yu Hsieh, Chin-Ying Yang, Shu-Yun Chen, Chung-Feng Kao, Po-Hsien Lu, Tsai-Wen Yang, Yao-Chuan Tsai

PA-P02 COMMUNICATION AND DRIVE INTEGRATION OF GANTRY-TYPE ROBOT
Zhen-Fan Lin, Chao-Wang Young*

PA-P03 BASED ON DEEP LEARNING AND IMAGE PROCESSING AN AUTOMATED FIELD-BASED PHENOTYPIC TRAIT MEASUREMENT AND BREEDING SUPPORT SYSTEM FOR SWEET POTATOES
Shang-Yu Hsieh*, Ting-Han Lin, Chin-Ying Yang, Po-Hsien Lu, Yao-ChuanTsai

PA-P04 DEEP LEARNING-BASED LOW-ACTIVITY STANDING ABNORMALITY DETECTION AND EAR-TAG TRACKING IN DAIRY COWS
Yu-Lun Tseng*, Yao-Chuan Tsai

PA-P05 CONSTRUCTION AND TASK-LEVEL VALIDATION OF A VIRTUAL PLATFORM FOR A SPONGE-SEEDLING TRANSPLANTING ROBOT UNDER VARIABLE TRAY POSES
Tianle Shen, Phanith Chea, Dong-Hoo Shin, Young-Min Kim, Lim-Du Hee, Woo-Young Kim, Kyeong-Hwan Lee*

PA-P06 EFFECTS OF FIELD SIZE AND SHAPE ON THE OPERATIONAL FEASIBILITY AND COVERAGE PERFORMANCE OF AUTONOMOUS AGRICULTURAL MACHINERY
Yong-Hyun Kim, Jumyeong Lee, Chankeun Lee, Seokhyun Ahn, Hak-Jin Kim*

PA-P07 INTERFERENCE-GUIDED BRANCH MANIPULATION FOR DUAL-ARM ROBOTIC PRUNING
Chao Teng, Woo-Young Kim, Kyeong-Hwan Lee*

PA-P08 RGB-BASED 3D RECONSTRUCTION AND PHENOTYPING WORKFLOW FOR TOMATO PLANTS
Yi Chen, Kyeong-Hwan Lee*

PA-P09 SIMULATION OF PESTCIDE TRANSPORT IN A SOYBEAN-GROWING FIELD: A CASE STUDY OF DINOTEFURAN
Uk Heo, Jongsoon Kim*

PA-P10 BIAS-AUGMENTED IEKF-BASED GNSS/INS INTEGRATION ALGORITHM FOR AUTONOMOUS AGRICULTURAL TRACTORS
Choongmin Lee, Wonhee Lee, Kwanjin Kim*

PA-P11 DEVELOPMENT OF A MACHINE LEARNING MODEL FOR PREDICTING SOIL MOISTURE IN CROP FIELDS USING WEATHER AND IRRIGATION DATA
Gyeong-Tae Kim, Hyung-Min Kim, Jun-Ha Choi, Hwang Gyu Lee, Tae-Wook Kim, Jin-Hyun Kim, Dong Suk Kim, Sang-Hun Lee, Suk-Ju Hong*

PA-P12 A REVIEW ON METAL BINDER JETTING PROCESSES APPLYING ACTIVE POWDER FEEDING-RECOATING MODULES

Do Hyun Ahn, Ye Jin Park, Pil Ho Lee, Chang Seop Shin*

PA-P13 THEORETICAL POWER REQUIREMENT OF A SPRAYER MODULE FOR A MULTIPURPOSE ELECTRIC PEPPER CULTIVATION PLATFORM

Md Nasim Reza, Hongbin Jin, Miao Miao Tu, Md Mamunur Rashid, Sujeong Jeong, Jong-Su Lee, Sun-Ok Chung*

PA-P14 SELF-CALIBRATING VIDEO MEASUREMENT OF CORRIDOR CROWDING AND ITS ASSOCIATION WITH DAIRY COW LAMENESS SCORING

Jia-Ming Zhou, Wen-Lin Chu*, Hsin-I Chiang

PA-P15 A PLANT GROWTH MONITORING SYSTEM BASED ON A PORTABLE LASER-INDUCED GRAPHENE SENSOR

I-Yin Chang*, Yao-Chuan Tsai

PA-P16 MOISTURE GRADING OF SPHAGNUM MOSS MEDIA USING MULTI-SOURCE FEATURE FUSION AND NEAR-INFRARED IMAGING

Xue-Ru Huang, Wei-Ling Chen, Hsi-Chun Hung, Wen-Lin Chu*

PA-P17 AUTOMATED PIPELINE FOR CONSTRUCTING AND BENCHMARKING A TOP-VIEW DAIRY COW IMAGE DATASET USING RFID INTEGRATION

Yu-Min Lee, Wen-Lin Chu*, Chien-Kai Wang

PA-P18 RELATING MACRONUTRIENT RATIOS IN THE TISSUE CULTURE MEDIUM TO PHALAENOPSIS GROWTH

Yi-Wei Lin, Wen-Lin Chu*, Chan-Yi Lin

PA-P19 NON-DESTRUCTIVE PREDICTION OF SUBSTRATE MOISTURE CONTENT IN *PHALAENOPSIS* ORCHIDS USING HYPERSPECTRAL IMAGING

Wei-Chun Lin, Wen-Lin Chu*, Wei-Ling Chen, Hsi-Chun Hung

PA-P20 DISTANCE-ADAPTIVE DEPTH CAMERA-LIDAR FUSION FOR PROXIMITY WARNING ON AGRICULTURAL MACHINERY

Seung-Yong Seo, Jin-Yeong Lee, Jae-Min Lee, Ryu-Gap Lim*

PA-P21 END-SENSING SYSTEM FOR IRRIGATION MONITORING IN BUILDING-INTEGRATED VERTICAL FARMS

Joo won Jeong, Meong Hun Lee*

PA-P22 PHYSICAL AI-BASED ARCHITECTURE FOR AUTONOMOUS AGRICULTURAL ROBOT OPERATIONS

Kiwoong Song, Myeong Hun Lee*

PA-P23 A DATA ACQUISITION STABILITY EVALUATION FRAMEWORK FOR MULTISENSING DEVICES IN SMART PIG BARNS
Hyun Jun Kim, Ik Tae Choi, Lee Meoung Hun*

PA-P24 DEVELOPMENT OF A VISION-GUIDED ROBOTIC ARM FOR AUTOMATED TOMATO POLLINATION
Li-Yun Wen*, Yi-Rou Hung, Wei-Lun Hsu, Yao-Chuan Tsai

PA-P25 DEEP LEARNING-BASED TOMATO AXILLARY SHOOT RECOGNITION WITH ROBOTIC ARM POSITIONING
Yi-Rou Hung*, Li-Yun Wen, Syuan-You Lin, Yao-Chuan Tsai

PA-P26 DEVELOPMENT OF A DISCRETE ELEMENT MODEL FOR DEHISCED KOREAN GINSENG SEEDS
Jin-Woo Park, Ju-Hyun Kim, Seung-Gwi Kwon, Wan-Soo Kim*

PA-P27 REQUIRED POWER OF AN AIR-DRILL SEEDER BY MUTIBODY DYNAMICS SIMULATION
Kang Uk Lee, Choong Ho Lee*

PA-P28 ANALYSIS OF SEED DISCHARGE CHARACTERISTICS ACCORDING TO THE CHANGES IN THE GEOMETRY OF AN AIR SEEDER SEED DELIVERY TUBE
Dae Seong Lee, Choong Ho Lee*

PA-P29 STITCH-BASED STRAIN SENSOR FOR REAL-TIME MONITORING OF STEM CIRCUMFERENCE VARIATION
Jongho Baek, Junyoung Park, Soo Chung*

PA-P30 UAV RGB IMAGE-BASED ANALYSIS OF CROP ROWS AND MISSING PLANTS IN PADDY-FIELD SOYBEAN FOR PRECISION WEEDING
In Seop Jang, June-Young Han, Sun-Bin Min, Dae-Cheol Kim, Yongjin Cho*

PA-P31 SPATIAL ESTIMATION OF PADDY SOIL PROPERTIES BY INTEGRATING MULTI-TEMPORAL UAV SPECTRAL FEATURES AND BLOCK KRIGING
June-Young Han, In-Seop Jang, Jeongju Chae, Seong-Won Lim, Dae-Cheol Kim, Yongjin Cho*

PA-P32 EVALUATION OF SATELLITE IMAGERY FOR PREDICTING ELECTRICAL CONDUCTIVITY IN PADDY SOILS
Sun-Bin Min, In Seop Jang, Jeong Ju Chae, Dae-Cheol Kim, Yongjin Cho*

PA-P33 DEVELOPMENT OF A SPATIAL OVERLAY FRAMEWORK FOR UAV-DERIVED NDVI AND PADDY SOIL PROPERTY MAPS
Seong-won Lim, Jin-ho Won, June-Young Han, Dae-Cheol Kim, Yong-jin Cho*

PA-P34 FIELD-SPECIFIC RELATIONSHIPS OF PROXIMAL SOIL SENSOR MEASUREMENTS WITH ORGANIC MATTER AND TOTAL NITROGEN IN PADDY SOILS
JeongJu Chae, Jinho Won, Seongwon Lim, Dae-Cheol Kim, Yongjin Cho*

PA-P35 GENETIC ALGORITHM-BASED FEATURE EXTRACTION FROM VISIBLE TRANSMISSION SPECTRA AND IMAGES FORCHICKENEMBRYOSEX PREDICTION

Akito Arimura, Hitomi Shibagaki, Tetsuhito Suzuki*

PA-P36 MULTI-VIEW CHICKEN FLOCK UNIFORMITY ESTIMATION COMBINING PERSPECTIVE TRANSFORMATION AND IMAGE ANALYSIS

Ting-Shao Chen*, Ming-Kun Hsieh, Kuang-Fu Chang, Yao-Chuan Tsai

PA-P37 WORK PATH OPTIMIZATION ALGORITHM FOR AUTONOMOUS BOOM SPRAYING IN RIDGE CULTIVATION ENVIRONMENTS

Deok-Keun Kim, Ji Won Choi, Soo Been Cho, Jung-sang Yoo, Seung-Hwan Yang*

PA-P38 DESIGN AND ADSORPTION CHARACTERISTIC ANALYSIS OF A SEED FEEDING DEVICE FOR NON-DESTRUCTIVE FOREST SEED SORTING

Hwang-Gyu Lee, Chung-Kwan Lee, Chan-Eun Kim, Tae-Wook Kim*

PA-P39 DISCUSSION OF STRUCTURAL SAFETY OF AN AUTONOMOUS AGRICULTURAL MOBILITY VEHICLE

Sang Min Lee, Kang Uk Lee, Jung Min Bae, Dae Seong Lee, Choong Ho Lee*

PA-P40 DEVELOPMENT AND DEMONSTRATION OF A MODULAR SMART FARM ROBOT FOR WHOLE-CYCLE STRAWBERRY CULTIVATION

Lae-Kyoung Lee*, Su-Yong An

PA-P41 PREDICTION OF SOYBEAN PLANT HEIGHT AND STEM DIAMETER USING UAV MULTISPECTRAL IMAGERY AND GROWTH RESPONSES TO SMART CULTIVATION TREATMENTS

ChangHyeok Park, ChanSeok Ryu*, GangIn Je, HoJun Kwon, Gang-Jin Lee

Poster 6 Smart Farm Systems and Renewable Energy

SF-P01 DEVELOPMENT OF A MULTIMODAL AI-BASED POULTRY HEALTH MONITORING SYSTEM INTEGRATING EDGE COMPUTING AND TRANSFER LEARNING FOR LAYING HEN PRODUCTION
Fu-Kai Chang*, Tsui-Lan Chou, Ming-Kun Hsieh, Yao-Chuan Tsai

SF-P02 A TWO-STAGE DEEP LEARNING-BASED MULTI-TYPE ABNORMAL COMB RECOGNITION SYSTEM
Yun-I Chu*, Yu-Jen Shih, Fu-Kai Chang, Ming-Kun Hsieh, Yao-Chuan Tsai

SF-P03 PERFORMANCE AND FIELD APPLICABILITY OF A SIMPLIFIED DRINKING-WATER TEMPERATURE CONTROL SYSTEM FOR BROILER HOUSES
La-Hoon Cho, Jin Kyung Kwon, Chung-Geon Lee, Jae Kyung Jang, Sung-Wook Yun, Jong-Pil Moon, Seong-Heon Kim*

SF-P04 CFD-BASED AIRFLOW ANALYSIS AND OPTIMIZATION OF HVAC AND DUST COLLECTION SYSTEMS IN BROILER HOUSES
Sun-hyoung Lee, Rack-woo Kim*, Su-been Ahn, Seung-hun Lee, Chan-min Kim, Hee-woong Seok, han Kim, Yun-jeong Lee, Yoon-kyu Hur, Hyeon-Chae Kim

SF-P05 PREDICTION OF METHANE EMISSIONS IN SWINE HOUSING BY MACHINE LEARNING APPLIED TO CONTINUOUS SENSOR DATA
Su-Been Ahn, Rack-Woo Kim*, Hang-Ju Cho, Yoo-Kyoung Seo, Da-Yeon Song

SF-P06 INTERNATIONAL STANDARDIZATION TRENDS FOR DATA INTEROPERABILITY IN AGRICULTURAL ELECTRONICS AND DATA-DRIVEN AGRIFOOD SYSTEMS
Hyuk Ki*, Hyunseok Lee, Sanghyuk Lee, Jihyeong Kim

SF-P07 IMPACT OF INITIAL MOISTURE ON FUEL QUALITY AND ENERGY RECOVERY DURING TORREFACTION
Sunyong Park*

SF-P08 DEVELOPMENT OF A TRACKED GREENHOUSE MOBILE MAPPING SYSTEM USING 3D LIDAR AND 2D SLAM
Ping-Chun Chen*, Fu-Kai Chang, Li-Yun Wen, Wu-Yang Shih, Yao-Chuan Tsai

SF-P09 RESISTIVE AMMONIA SENSOR BASED ON POLYPYRROLE, ZINC OXIDE, AND REDUCED GRAPHENE OXIDE COMPOSITES
Chih-Chieh Liu*, Yao-Chuan Tsai

SF-P10 RELATIONSHIP BETWEEN MUSHROOM FRUITING INITIATION RATEAND ENVIRONMENTAL FACTORS USING IMAGE RECOGNITIONAND DATA ANALYSIS
Chien-Ying Lee*, Yu-Jen Shih, Wu-Yang Sean, Chi-Wei Liu, Yao-Chuan Tsai

SF-P11 COMPARATIVE LIFE CYCLE ASSESSMENT OF SMART AND CONVENTIONAL SEEDLING NURSERY SYSTEMS

Kyungjae Song, Changseop Shin*

SF-P12 ELECTRODE STATUS DIAGNOSIS FOR REAL-TIME IN-SITU MONITORING OF HYDROPONIC NUTRIENT SOLUTIONS USING ION-SELECTIVE ELECTRODES

Yuna Kwon, Hak-Jin Kim*, Minki Kang, Joonhwan Kim

SF-P13 COOLING PERFORMANCE AND AI-BASED PREDICTION OF GREENHOUSE ACTUATOR CONTROL SIGNALS AND VALIDATION

Min Hwan Yu, Kyeong Sik Kang, Seon Yeop Kim, Dae Hyun Kim*

SF-P14 ENVIRONMENTAL AND ENERGY ANALYSIS OF A MINI-GREENHOUSE USING LED PWM AND CFD

Ga Eun Kim, Soo min Lim, Kyeong Sik Kang, Seon Yeop Kim, Dae Hyun Kim*

SF-P15 FUEL PROPERTY EVALUATION AND MACHINE LEARNING PREDICTION FOR CATALYTIC TORREFACTION OF *QUERCUS VARIABILIS*

Chae Young Jang, Su Jeong Lee, Kyeong Sik Kang, Seon Yeop Kim, Sunyong Park, Dae Hyun Kim*

SF-P16 ANALYSIS OF NUTRIENT UPTAKE PATTERNS IN FOGPONICS-CULTIVATED SEED POTATOES ACROSS GROWTH STAGES

Yeong Hyeon Shin, Je-Min Park, Muhammad Amjad, Uk-Hyeon Yeo*, Woo-Jae Cho*

SF-P17 VERIFYING A DRAFT STANDARD BEFORE ENACTMENT: IMPLEMENTATION AND MEASUREMENT OF SMART GREENHOUSE NODE DISCOVERY

Dae-Hyun Jung, Inchan Choi, Joon Yong Kim*

SF-P18 ADMITTING INSTALLED EQUIPMENT TO AN OPEN-FIELD STANDARD UNDER DEVELOPMENT: WHAT THE GATEWAY BOUNDARY COSTS

Hyein Lee, Jae-Seok Seo, Joon Yong Kim*

SF-P19 THREE-DIMENSIONAL SHAPE AND VOLUME ANALYSIS OF A PIG MODEL USING MULTI-VIEW DEPTH IMAGES

Seung Hyeon Cheon, Byeong Eun Moon*

KSAM Special Session

특별세션 1

○ **세션명: 애그테크 산학연 기술교류회**

○ **일　시: 2026. 10. 21.(수) 오후**

○ **장　소: 부산 BEXCO 제2전시장 123호**

○ **세션 일정**

시간	분	내용	발표자
13:30~14:00	30	▪ 등록	
14:00~14:10	10	▪ 개회 및 내빈소개	박학순 (경북대학교 밭농업기계개발연구센터)
14:10~14:20	10	▪ 개회사	하유신 (경북대학교 밭농업기계개발연구센터)
14:20~16:20	120	▪ 초청강연: 노지농업 분야 Physical AI 기술 – 이론 및 적용사례	권오준 대표이사 (JS FLUX)
16:20~16:30	10	Coffee Break	
16:30~17:00	30	▪ 질의응답	홍동혁 (경북대학교 밭농업기계개발연구센터)

※ 강연자 및 내용은 진행상황에 따라 변경 가능.

특별세션 2

○ **세션명: 신뢰할 수 있는 농업AI, 원칙에서 현장까지**

○ **일　시: 2026. 10. 21.(수) 오후**

○ **장　소: 부산 BEXCO 제2전시장 124호**

○ **세션 일정**

시간	분	내용	발표자
13:00~13:20	20	▪ 등록	
13:20~13:30	10	▪ 개회 및 세션 소개	강윤임 연구관 (농촌진흥청)
13:30~13:50	20	▪ 신뢰할 수 있는 AI 생태계와 농업분야 정책 방향 – 인증 · 자율규제 동향, 법적 가이드라인, 거버넌스 등	전창배 이사장 (국제인공지능윤리협회)
13:50~14:10	20	▪ 스마트팜 현장에서 마주하는 AI, 기대와 우려 – 자동화 · 데이터 도입 경험, 편익, 오작동 리스크 등	정병두 대표 (로즈벨리)
14:10~14:30	20	▪ 농업 특화 AI 서비스 개발과 윤리적 책임 – 데이터 활용과 설명 가능성 확보 등	박흔동 대표 ((주)지농)
14:30~14:50	20	▪ 신뢰할 수 있는 농업AI를 위한 가이드라인 검토 방향 – 기본원칙, 핵심요건, 자율점검체계(안) 등	양승엽 연구위원 (한국노동연구원)
14:50~15:00	10	Coffee Break	
15:00~15:30	30	▪ 종합토론: 선언에서 이행으로, 신뢰할 수 있는 농업 AI 현장의 과제 – 전창배 이사장(국제인공지능윤리협회) – 양승엽 연구위원(한국노동연구원) – 박흔동 대표((주)지농) – 정병두 대표(로즈벨리) – 문광진 교수(국립목포대) – 정휘웅 소장(42MARU) 등	좌장: 김민영 과장 (농촌진흥청)

※ 강연자 및 내용은 진행상황에 따라 변경 가능.

특별세션 3

○ **세션명: AgTech 기업의 Physical AI 기술 개발과 상용화 전략**

○ **일　시: 2026. 10. 21.(수) 오후**

○ **장　소: 부산 BEXCO 제2전시장 125호**

○ **세션 일정**

시간	분	내용	발표자
13:00~13:20	20	▪ 등록, 개회 및 세션 소개	전찬우 ((주)아그모)
13:20~13:50	30	▪ Safety for Full Autonomy: build AI safely, prove safety beyond AI	이창주 ((주)아그모)
13:50~14:20	30	▪ Physical AI 기반 농업 AX와 성공 생태계	최준기 ((주)대동 에이아이랩)
14:20~14:50	30	▪ Robot learning for greenhouse task automation: field practice and challenges	조진형 (아이오크롭스)
14:50~15:00	10	Coffee Break	
15:00~15:30	30	▪ Physical AI, 이상과 현실. 실타래를 풀어나가는 방법	정남형 (LS엠트론)
15:30~16:00	30	▪ 농업/건설기계 AI를 위한 센서 시스템 사례	김정원 (보쉬코리아)
16:00~16:30	30	▪ 농업 physical AI의 현재와 미래	이규화 ((주)메타파머스)
16:30~17:00	30	▪ 필드 환경에서의 Physical AI 시스템 신뢰성: 농업용 자율주행 Level 4 개발 사례를 중심으로	서민열 ((주)티와이엠 아이씨티)

※ 강연자 및 내용은 진행 상황에 따라 변경 가능.

특별세션 4

○ **세션명: 농업기계 현장기술 확산 및 전문인력 양성 방안**

○ **일　시: 2026. 10. 21.(수) 오후**

○ **장　소: 부산 BEXCO 제2전시장 126호**

○ **세션 일정**

시간	분	내용	발표자
13:00~13:20	20	▪ 등록	
13:20~13:30	10	▪ 개회 및 세션 소개	홍순중 (한국농수산대학교)
13:30~13:45	15	▪ 첨단농업기계 기술동향	임류갑 (순천대학교)
13:45~14:00	15	▪ 농업기계 교육 • 자격 • 채용 연계 전문인력 양성 현황	강진석 (용인시농업기술센터)
14:00~14:15	15	▪ 시군 농업기술센터 임대사업소 운영실태 현황	이정민 (국립농업과학원)
14:15~14:30	15	▪ 농업기계 사후관리 시군 전문인력 양성 현황	서일환 (강화군농업기술센터)
14:30~14:45	15	▪ 농업기계 현장기술 확산 실태	정해동 (한국농수산대학교)
14:45~15:00	15	Coffee Break	
15:00~16:30	90	▪ 종합토론: 농업기계 현장기술 확산 및 전문인력 양성 방안 – 정명갑(농촌진흥청 농촌인적자원개발센터 센터장) – 안상화(한국농기계공업협동조합 정책지원팀 팀장) – 황민호(강원도 원주영서고등학교 산업기계과 부장) – 이영환(한국농업기계학회 농기계교관분과 위원장) – 유정영(홍천군농업기술센터, 농기계전문지도연구회 회장)	좌장 김병갑 (국립농업과학원 농업공학부)

※ 발표자, 토론자 등 추진일정은 상황에 따라 변경될 수 있음.

특별세션 5

○ 세션명: 농축산 수확후공정 시스템과 최적화 전략 및 연구동향

○ 일　시: 2026. 10. 22.(목) 오후

○ 장　소: 부산 BEXCO 제2전시장 123호

○ 세션 일정

시간	분	내용	발표자
14:00~14:10	10	▪ 개회 및 세션 소개	이현동 (농과원)
14:10~14:30	20	▪ 식품 가공 시스템 설계 및 공정 최적화 접근법	이승현 (충남대)
14:30~14:50	20	▪ 김치 가공 부산물 전처리 시스템 기술	천호현 (김치연)
14:50~15:10	20	▪ 농산물 벌크 단위 예건 및 저장 일관화 기술	지형용 (생기연)
15:10~15:30	20	▪ 냉동식품 포장 자동화 시스템 기술	조세운 (전자연)
15:30~15:40	10	Coffee Break	
15:40~16:00	20	▪ 농산물 수확후 선별과 저장 · 유통 중 품질평가 기술	김기석 (서울대)
16:00~16:20	20	▪ 스마트 APC 적용을 위한 Physical A.I 솔루션	이상호 (KT)
16:20~16:40	20	▪ 스마트 도축장 기술의 현재와 미래 : 지능형 도체 평가와 자동화 기술 현황	김준태 (충남대)
16:40~17:00	20	▪ 곡류 수확후처리 기술의 연구 동향과 미래 전망 : 쌀과 밀을 중심으로	한재웅 (공주대)

※ 강연자 및 내용은 진행상황에 따라 변경 가능.

특별세션 6

○ **세션명: 스마트시설원예 현황 및 국제경쟁력확보 전략**

○ **일　시: 2026. 10. 22.(목) 오후**

○ **장　소: 부산 BEXCO 제2전시장 124호**

○ **세션 일정**

시간	분	내용	발표자
13:00~13:20	30	▪ 등록	
13:20~13:30	10	▪ 개회 및 세션 소개	장영균 (그린씨에스(주))
13:30~13:50	20	▪ 첨단온실 구조 · 기자재 기술 현황과 국산화 전략 – 수입의존 기자재의 국산화와 해외진출 방향	정순목 ((주)그린플러스)
13:50~14:10	20	▪ 한국형 스마트팜 제어기술 현황 및 경쟁력 – 복합환경 · 양액 통합제어 기술의 현장적용기술	장영균 (그린씨에스(주))
14:10~14:30	20	▪ 스마트팜 데이터 활용 현황과 AI기술 적용 전략 – 통합관제시스템 데이터 컨설팅 및 AI 도입 사례	장익훈 ((주)지농)
14:30~14:50	20	▪ 개방형 스마트팜 플랫폼과 민관협력 산업화 전략 – 스마트팜표준 연계를 통한 상호운용성 확보	방지웅 (농촌진흥청 시설원예연구소)
14:50~15:10	20	▪ 한국형 스마트온실의 에너지절감 측면 경쟁력 – 에너지절감기술로 본 한국형 온실의 기술 진단	김락우 (서울대학교)
15:10~15:30	20	Coffee Break	
15:30~16:00	30	▪ 종합토론: 시설원예 스마트팜의 국제경쟁력확보 전략 – 정순목((주)그린플러스 수석연구원): – 장영균(그린씨에스(주) 연구소장): – 양명균(전북대학교 생물산업기계공학과 교수): – 김준용(서울대학교 농업생명과학연구원 팀장): – 최인찬(국립농업과학원 스마트팜개발과 연구관): – 장유섭(팜패스 대표이사):	좌장 이시영 (농촌진흥청 국립농업과학원)

※ 강연자 및 내용은 진행상황에 따라 변경 가능.

Special Session 7

○ Title : Latest Research Trends in Agricultural Robots

○ Date : 2026. 10. 22. (Thu)

○ Venue : Room 125, Exhibition Center 2, BEXCO

○ Session Schedule

Time	min.	Presentation Title	Presenter
14:00~14:10	10	▪ Opening and Session Introduction	Seung-Hwan Yang (KITECH)
14:10~14:30	20	▪ Characteristics of Tactile Sensors in Grasping Operations for Fruit and Vegetables using Five-Fingered Robot Hand	Seung-Hwan Yang (KITECH)
14:30~14:50	20	▪ Perception and Autonomy in Agricultural Robotics: Crop Perception, SLAM, and Multi-Robot Control	Chanyoung Ju (KITECH)
14:50~15:10	20	▪ Development of an Imitation Learning Algorithm for Strawberry Harvesting in Irregular Environments	Byeong-gil Han (KIMM)
15:10~15:30	20	▪ Development of a Robotic tool for Stemless Strawberry Harvesting	Taeyong Choi (KIMM)
15:30~15:40	10	Coffee Break	
15:40~16:00	20	▪ Load distribution control of a Deep-RL-based variable driving platform considering eccentric loads	Heon Soo Choi (KIRO)
16:00~16:20	20	▪ Application and Performance Evaluation of Offset Driving Paths for Orchard Weeding Robots	Jae Wan Koo (KIRO)
16:20~16:40	20	▪ Method for Heterogeneous Sensor Data Fusion and Crop 3D Data Generation for AI Robot Demonstration in Facility Agriculture	Sunghwan Jeong (KETI)
16:40~17:00	20	▪ Development and Demonstration of a Modular Smart Farm Robot System for Whole-Cycle Strawberry Cultivation	Laekyoung Lee (ETRI)

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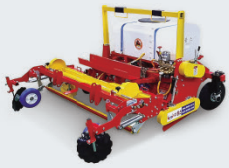
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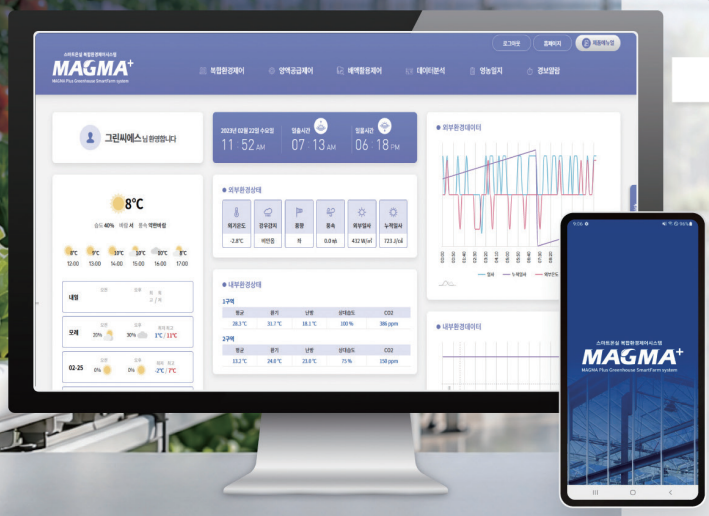
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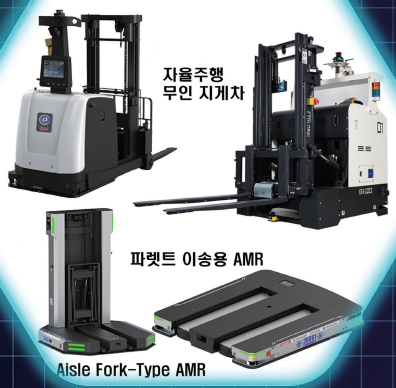
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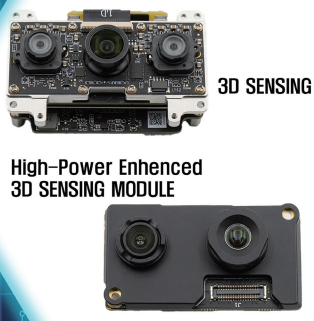
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▲ DSA-1300F (마늘줄기파쇄기)
▲ DSA-6G ▲ DSA-7G ▲ DSA-8G ▲ DSA-10G (넝쿨파쇄기-고구마, 감자 줄기파쇄기)
▲ DSA-1600K ▲ DSA-1600K1 (트랙터용 배토기)

★ 고구마, 감자 수확전 줄기제거 및 과수원 잡초 작업 ★

★ 경운기용 · 관리기용 땅속작물 수확기 ★


▲ DSA-1500T (트랙터용 제초 및 고구마 줄기 파쇄)
▲ DSA-750T (넝쿨파쇄기-고구마,감자 줄기파쇄기)
▲ DS-650 (경운기용 고구마, 감자 수확기)
▲ DS-650B (관리기용 땅속작물 수확기)

★ 비닐피복기 ★


▲ DS-700(경운기용 제초기)
▲ DSA-1700B(마늘,양파 등 평두둑)
▲ DS-1350A / 1550A (경운기용 마늘, 양파 수확기)
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