**Curriculum Vitae**

 **홍 석 주**

**기초 정보**

|  |  |
| --- | --- |
| 성명 | 홍석주 (Suk-Ju Hong, 洪碩住) |
| 생년월일 | 1993. 09. 18. |
| 주소 | 충청북도 청주시 강내면 태성리 405-2 |
| 소속 | 서울대학교 농업생명과학대학 바이오시스템공학과농산가공 및 생체물성공학 연구실 |
| 국적 | 한국 (Republic of Korea) |
| 학위 | 공학박사 |
| 연락처 | 010-5108-1589 |
| E-mail | hsj5596@snu.ac.kr |

**Research Interests**

* Nondestructive testing
* Spectroscopy
* Machine vision
* Deep learning
* Post-harvest process engineering

**Education and Qualifications**

* **Ph.D. in Biosystems Engineering** 2022.08.
Department of Biosystems Engineering, Seoul National University, Republic of Korea
* **PhD candidate in Engineering** 2019. 09. ~2022.08.
Department of Biosystems Engineering, Seoul National University, Republic of Korea
Lab. of Physical Properties and Process Engineering of Agricultural Products
Advisor: Ghiseok Kim
* **Educational course of integrated Master and PhD in Engineering**
 2016. 09. ~ 2019. 08.
Department of Biosystems Engineering, Seoul National University, Republic of Korea
Lab. of Physical Properties and Process Engineering of Agricultural Products
Advisor: Ghiseok Kim
* **Bachelor’s Degree in Engineering** 2016.08.
Department of Biosystems Engineering, Seoul National University, Republic of Korea

**Professional Experiences**

* **Researcher** 2022.09. ~
Seoul National University, Seoul, Republic of Korea
Department of Biosystems Engineering
* **Researcher** 2022.03. ~2022.08.
Research Institute of Agriculture and Life Science, Seoul National University, Republic of Korea

**Research Projects**

* Development of hyperspectral image-based detection module for internal defect inspection of 3D-IC semiconductor modules

2016. ~ 2017.

Supporting organization: Small and Medium Business Administration

* Development of moisture content measurement technology of leaf litters using near infrared spectroscopy

 2016. ~ 2017.

Supporting organization: Korea Forest Service

* Development of real-time smartphone-based measurement technology of rancidity of edible oils

 2017. ~ 2018.

Supporting organization: National Research Foundation of Korea

* Development of avian influenza surveillance platform using drone and CCTV

 2017. ~ 2018.

Supporting organization: Korea Institute of Planning and Evaluation for Technology of Food, Agriculture, Forestry and Fisheries (IPET)

* Development of crop stress quantification model and system through infrared image analysis

 2017. ~ 2018.

Supporting organization: Rural Development Administration

* Development of aerial image-based remote inspection module for surface and internal defect inspection of piers

 2018. ~ 2019.

Supporting organization: Ministry of SMEs and Startups

* Development of portable/large-area blackbody system and evaluation technology of blackbody

 2018. ~ 2019.

Supporting organization: Ministry of SMEs and Startups

* Measurement and evaluation of rice seed viability using hyperspectral imaging

 2018. ~ 2020.

Supporting organization: National Research Foundation of Korea

* Development of advanced technology for cloud-based non-destructive sugar content measurement device operation program

 2018. ~ 2020.

Supporting organization: Korea Institute of Planning and Evaluation for Technology of Food, Agriculture, Forestry and Fisheries (IPET)

* Development of real-time technology of garlic’s root part using image information and deep learning

 2019.

 Supporting organization: IGSP

* Development of deep learning algorithm for real-time diagnosis of crop diseases and pests

 2019.

Supporting organization: Korea Institute of Planning and Evaluation for Technology of Food, Agriculture, Forestry and Fisheries (IPET)

* Development of image-based strawberry pest and disease recognizer for horticulture facility vehicle

 2020.

Supporting organization: Samsung

* Development of farm work and farmer recognition/tracing technique using multiple imaging sensors

 2020.~2021.

Supporting organization: Korea Institute of Planning and Evaluation for Technology of Food, Agriculture, Forestry and Fisheries (IPET)

* ICT-based Technology for Forest Disaster Management

 2020. ~ 2022.

Supporting organization: Korea Forest Service

* Development of recognition technologies and harvest time determination technologies necessary for facility cucumber harvest

 2020. ~ 2022.

Supporting organization: Korea Institute of Planning and Evaluation for Technology of Food, Agriculture, Forestry and Fisheries (IPET)

* Image analysis and quantification technology for weather stress damage of field crops

 2020. ~ 2022.

Supporting organization: Rural Development Administration

* Development of large-scale crop stress measurement technology using UAV

 2020. ~ 2022.

Supporting organization: Rural Development Administration

* Development of non-destructive quality measurement technology for diseases and viability of seeds based on multi-imaging and deep learning

 2021. ~ 2022.

Supporting organization: PPS

* Development of the collagen localization technique on meat using hyperspectral imaging

 2021. ~ 2022.

Supporting organization: Beyond-Honeycomb

* Development of non-destructive method for fruit volume measurement and harvest season fruit characteristics determination

 2021. ~ (ongoing)

Supporting organization: Rural Development Administration

* Development of Monitoring, fruit thinning and harvesting robot for hydroponic farm

 2021. ~ (ongoing)

Supporting organization: Korea Institute of Planning and Evaluation for Technology of Food, Agriculture, Forestry and Fisheries (IPET)

* Investigation of the occurrence density and timing of *Matsucoccus thunbergianae* in 2022 2022.

Supporting organization: Korea Forestry Promotion Institute

* Establishment of fresh agricultural product fulfillment center and development of core technology 2022. ~ (ongoing)

Supporting organization: Korea Forestry Promotion Institute

**Scientific Outputs**

**Journal Papers**

**<SCI, SCIE>**

1. **Hong, S.-J.**, Rho, S.-J., Lee, A.-Y., Park, H., Cui, J., Park, J., Hong, S.-J., Kim, Y.-R., & Kim, G. (2017). Rancidity estimation of perilla seed oil by using near-infrared spectroscopy and multivariate analysis techniques. Journal of Spectroscopy, 2017.

2. **Hong, S.-J.**, Han, Y., Kim, S.-Y., Lee, A.-Y., Kim, G. (2019). Application of Deep-Learning Methods to Bird Detection Using Unmanned Aerial Vehicle Imagery. Sensors 2019, Vol. 19, Page 1651, 19(7), 1651.

3. **Hong, S.-J.**, Kim, S.-Y., Kim, E., Lee, C.-H., Lee, J.-S., Lee, D.-S., Bang, J., & Kim, G. (2020). Moth Detection from Pheromone Trap Images Using Deep Learning Object Detectors. Agriculture, 10(5), 170.

4. **Hong, S.-J.**, Nam, I., Kim, S.-Y., Kim, E., Lee, C.-H., Ahn, S., Park, I.-K., & Kim, G. (2021). Automatic Pest Counting from Pheromone Trap Images Using Deep Learning Object Detectors for Matsucoccus thunbergianae Monitoring. Insects, 12(4), 342. (Title Story Paper)

5. **Hong, S.-J.**, Yang, T., Kim, S.-Y., Kim, E., Lee, C.-H., Nurhisna, N. I., Kim, S., Roh, S.-W., Kim. G. (2022). Nondestructive Prediction of Rice Seed Viability Using Spectral and Spatial Information Modeling of Visible–Near Infrared Hyperspectral Images. Journal of the ASABE, 65(5), 997-1006.

6. **Hong, S. J.**, Park, S., Lee, A., Kim, S. Y., Kim, E., Lee, C. H., & Kim, G. (2023). Nondestructive Prediction of Pepper Seed Viability Using Single and Fusion Information of Hyperspectral and X-ray Images. Sensors and Actuators A: Physical, 114151.

7. Bae, J. Y., Lee, K.-S., Hur, H., Nam, K.-H., **Hong, S.-J.**, Lee, A.-Y., Chang, K. S., Kim, G.-H., & Kim, G. (2017). 3D Defect Localization on Exothermic Faults within Multi-Layered Structures Using Lock-In Thermography: An Experimental and Numerical Approach. Sensors, 17(10), 2331.

8. Kim, G., **Hong, S.-J.**, Lee, A.-Y., Lee, Y.-E., & Im, S. (2017). Moisture Content Measurement of Broadleaf Litters Using Near-Infrared Spectroscopy Technique. Remote Sensing, 9(12), 1212.

9. Bae, J. Y., Choi, W., **Hong, S.-J.**, Kim, S., Kim, E., Lee, C.-H., Han, Y., Hur, H., Lee, K.-S., Chang, K. S., Kim, G.-H., & Kim, G. (2020). Design, Fabrication, and Performance Evaluation of Portable and Large-Area Blackbody System. Sensors, 20(20), 5836.

10. Han, Y., Tarakey, B. A., **Hong, S.-J.**, Kim, S.-Y., Kim, E., Lee, C.-H., & Kim, G. (2021). Calibration and Image Processing of Aerial Thermal Image for UAV Application in Crop Water Stress Estimation. Journal of Sensors, 2021, 1–14.

11. Kim, S.-Y., **Hong, S.-J.**, Kim, E., Lee, C.-H., & Kim, G. (2021). Neural Network Based Prediction of Soluble Solids Concentration in Oriental Melon Using VIS/NIR Spectroscopy. Applied Engineering in Agriculture, 37(4), 653–663.

12. Kim, E., **Hong, S. J.**, Kim, S. Y., Lee, C. H., Kim, S., Kim, H. J., & Kim, G. (2022). CNN-based object detection and growth estimation of plum fruit (*Prunus mume*) using RGB and depth imaging techniques. Scientific Reports, 12(1), 1-16.

13. Kim, S.-Y., **Hong, S.-J.**, Kim, E., Lee, C.-H., & Kim, G. (2023). Application of ensemble neural-network method to integrated sugar content prediction model for citrus fruit using Vis/NIR spectroscopy. Journal of Food Engineering, 338, 111254.

0

**<SCOPUS, KCI, etc>**

1. **Hong, S.-J.**, Lee, A.-Y., Han, Y., Park, J., So, J. D., & Kim, G. (2018). Rancidity Prediction of Soybean Oil by Using Near-Infrared Spectroscopy Techniques. Journal of Biosystems Engineering, 43(3).

2. Kim, W.-K., **Hong, S.-J.**, Cui, J., Kim, H.-J., Park, J., Yang, S.-H., & Kim, G. (2017). Application of NIR Spectroscopy and Artificial Neural Network Techniques for Real-Time Discrimination of Soil Categories. Journal of the Korean Society for Nondestructive Testing, 37(3), 148–157.

3. Park, E., **Hong, S.-J.**, Lee, A.-Y., Park, J., Cho, B.-K., & Kim, G. (2017). Phenotyping of Low-Temperature Stressed Pepper Seedlings Using Infrared Thermography. Journal of Biosystems Engineering, 42(3), 163–169.

4. Lee, A., Kim, S.-Y., **Hong, S.-J.**, Han, Y., Choi, Y., Kim, M., Yun, S. K., & Kim, G. (2019). Phenotypic Analysis of Fruit Crops Water Stress Using Infrared Thermal Imaging. Journal of Biosystems Engineering, 44(2), 87–94.

5. Nurhisna, N. I., **Hong, S.-J.**, Kim, S.-Y., Kim, E., Lee, C.-H., Kim, S., Roh, S.-W., Ryu, J., & Kim, G. (2021). Basic study on multiple sensing techniques for plant phenomics analysis of plant resources. 농업기계공학, 1(1), 25–29.

6. Nurhisna, N. I., Kim, S. Y., Park, S., **Hong, S.-J.**, Kim, E., Lee, C. -H., Kim, S., Ryu, J., Roh, S., Kim, D., & Kim, G. (2022). Quality Estimation of Net Packaged Onions during Storage Periods using Machine Learning Techniques. 한국포장학회지, 28(3), 237-244.

**Patents and Copyrights**

(특허/등록) 가시광/근적외선 초분광 현미경기반 영상 측정장치를 이용한 영상 측정방법

Imaging Measurement Method Using Hyperspectral Imaging Measurement Apparatus

출원일 2017.01.26 등록일 2018.06.22

(특허/등록) 휴대용 대면적 흑체 시스템 및 그 평가방법

 Potable Large Scaled Black Body System and Evaluation Method of It

출원일 2018.12.31 등록일 2020.05.06

(특허/등록) 과수의 저온피해 방지용 장파장 원적외선 방사식 가열장치

Far-Infrared Radiation Type Heating Apparatus for Preventing Cold Weather Damage of Fruit Trees

출원일 2019.12.16 등록일 2020.06.03

(특허/출원) 과일 당도 비파괴 측정모델 생성 및 공유 플랫폼

Creation and Sharing Platform of Nondestructive Sugar Content Measurement Model for fruit

출원일 2021.02.05

(저작권) 과일 당도모델 운영 소프트웨어

등록일 2021.01.11

(저작권) 열화상기반 작물 생리장애 분석 프로그램

등록일 2021.03.04

(저작권) 컬러영상기반 페로몬 트랩 솔껍질깍지벌레 개체수 카운팅 프로그램

등록일 2021.09.10