**Curriculum Vitae**

**홍 석 주**

**기초 정보**

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| 성명 | 홍석주 (Suk-Ju Hong, 洪碩住) |
| 생년월일 | 1993. 09. 18. |
| 주소 | 충청북도 청주시 강내면 태성리 405-2 |
| 소속 | 서울대학교 농업생명과학대학 바이오시스템공학과  농산가공 및 생체물성공학 연구실 |
| 국적 | 한국 (Republic of Korea) |
| 학위 | 공학박사 |
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**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.

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**<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

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등록일 2021.09.10