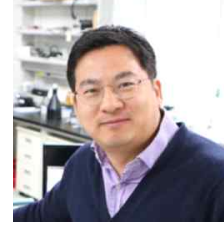


CURRICULUM VITAE

Jae Youn Hwang, Ph.D.

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1. PERSONAL INFORMATION

A. Appointment and Professional address

Chair, Department of the Interdisciplinary Studies, DGIST

Chair, Biomedical Science and Engineering, DGIST

Professor, Department of Electrical Engineering and Computer Science, DGIST

Professor, The Interdisciplinary Studies of Artificial Intelligence, DGIST

Professor, The Interdisciplinary Studies of Biomedical Science and Engineering, DGIST

Board Member in Academic Affairs, The Korean Society of Medical and Biological Engineering (KOSOMBE)

Board Member, Daegu National Science Museum

333 Techno Jungang-daero. Heyonpung-myeon. Dalseong-gun, Daegu , Republic of KOREA

B. Education

- Ph. D., Biomedical Engineering, University of Southern California, USA, Los Angeles, 2009
- M.S., Biomedical Engineering, Seoul National University, Seoul, Korea, 2003
- B.S., Electrical Engineering, Korea University, Seoul, Korea, 2001

C. Professional Experience

- DGIST (Daegu Gyeongbuk Institute of Science & Technology), Professor, 2022 ~ Current
- Daegu National Science Museum, Board Member, 2025 ~ current
- DGIST (Daegu Gyeongbuk Institute of Science & Technology), Associate Vice President for Strategic Planning, 2021~ 2023
- Dabeeo Inc, External Board Member, 2022 ~ 2023
- DGIST (Daegu Gyeongbuk Institute of Science & Technology), Associate Professor,

2017 ~ 2022

- DGIST (Daegu Gyeongbuk Institute of Science & Technology), Assistant Professor, 2014 ~ 2017
- NIH Ultrasonic Transducer Research Center (UTRC), Research Associate, 2012 ~ 2014
- Cedars-Sinai Medical Center, Postdoctoral Researcher, 2009 ~ 2012
- SNU Medical Research Center, Researcher, 2003 ~ 2004

d. Honors and Awards

- Best Teaching (Mentor) Award in DGIST, 2016
- IEEE RTCSA 2016 Outstanding Service Award, 2016
- Malaniak award at CSMC (final list), 2010
- Grodins Symposium Best Poster Award at USC, 2009
- Frederick Urbach Travel Award at American Society for Photobiology, 2008
- Graduate fellowship, Korea Science and Engineering Foundation, 2004~2005
- Scholarship at Seoul National University, 2002
- Special Honors Student Award at Korea University, 2000

2. RESEARCH, SCHOLARLY & CREATIVE ACTIVITIES

A. Publications

• Peer Review Journals and Conference Proceedings

1. Sewoong Kim, Moon Hwan Lee, Dong Hun Lee, and **Jae Youn Hwang***, “Intelligent Smartphone-based Multimodal Optical Imaging Platform for Discriminating Seborrheic Dermatitis and Psoriasis”, NPJ Digital Medicine, 2025 (In Preparation).
2. Heeyeon Park, Sangyeon Yoon, and **Jae Youn Hwang***, “Multimodal Cell Elastographic Microscope”, Nature Communication, 2025 (In Preparation).
3. Thiago Coutinho Cavalcanti, Sewoong Kim, Moo Kyun Park, and **Jae Youn Hwang***, “AI-Based Mobile Spectral Imaging Otoscope for Accurate Diagnosis of Various Types of Otitis media”, IEEE Journal of Biomedical and Health Informatics, 2025 (In Preparation).
4. Haeyun Lee, Kyungsu Lee, Moon Hwan Lee, Yongsoon Eun, Lucy Youngmin Eun* and **Jae Youn Hwang***, Expert-level differentiation of incomplete Kawasaki disease

and pneumonia from echocardiography via multiple large receptive attention mechanisms, *Computers in Biology and Medicine*, 2025

5. Kyungsu Lee, Haeyun Lee, and **Jae Youn Hwang***, "SoN: Selective Optimal Network for Smartphone-based Indoor Localization in Real-time", *Expert Systems With Applications*, 2025
6. Kyungsu Lee, Haeyun Lee, Jae Youn Hwang*. "Connectome Mapping: Shape-Memory Network via Interpretation of Contextual Semantic Information", *The Thirteenth International Conference on Learning Representations (ICLR2025)*, 2025
7. Moon Hwan Lee, Kyungsu Lee, Youngseung Yoo, HyungJoon Cho, Euiheon Chung, **Jae Youn Hwang***, "Machine Learning-Enhanced Skull-Universal Acoustic Hologram for Efficient Transcranial Ultrasound Neuromodulation Across Varied Rodent Skulls", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 2024
8. Kyungsu Lee, Hae Youn Lee, Juhum Park, and **Jae Youn Hwang***, "Fine-Grained Binary Object Segmentation in Remote Sensing", *IEEE Transactions on Geoscience and Remote Sensing*, 2024
9. Kyungsu Lee, Haeyun Lee, Moon Hwan Lee, Sewoong Kim, Jaeseung Yang, Youngsoon Eun, Lucy Youngmin Eun, and **Jae Youn Hwang***, "Explainable Multiple Receptive Attention Network for Expert Cardiologist Compatible Incomplete Kawasaki Disease Diagnosis on Echocardiography", *2024 IEEE First International Conference on Artificial Intelligence for Medicine, Health and Care (AIMHC)*, 2024
10. Kyungsu Lee, Moon Hwan Lee, Dongho Kang, Sewoong Kim, Jin Ho Chang, Seung-June Oh, **Jae Youn Hwang***, "Intelligent Bladder Volume Monitoring for Wearable Ultrasound Devices: Enhancing Accuracy through Deep Learning-based Coarse-to-Fine Shape Estimation", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 2024
11. Jeong-Whun Kim, Kyungsu Lee, Hyun Jik Kim, Hae Chan Park, **Jae Youn Hwang**, Seok-Won Park, Hyoun-Joong Kong, Jin Youp Kim, "Predicting Obstructive Sleep Apnea Based on Computed Tomography Scan Using Deep Learning Models", *American Journal of Respiratory and Critical Care Medicine*, 2024.
12. Jinah Park, Jihoon Cho, Kyungeun Lee, Jiye Lee, Fangxu Xing, Xiaofeng Liu, Hyungjoon Bae, Kyungsu Lee, Jae Youn Hwang, Georges El Fakhri, Kyung-Wook Jee, Jonghye Woo, "Evaluation of few-shot detection of head and neck anatomy in CT", *SPIE Medical Imaging*, 2024
13. Kyungsu Lee, Haeyun Lee, Moon Hwan Lee, Jin Ho Chang, C-C Jay Kuo, Seung-June Oh, Jonghye Woo, **Jae Youn Hwang***, "Multi-Scale Self-Attention Network for Denoising Medical Images", *APSIPA Transactions on Signal and Information Processing*, 2024.

14. Jeong Hyun Ha, Haeyun Lee, Seok Min Kwon, Hyunjin Joo, Guang Lin, Deok-Yeol Kim, Sukwha Kim, **Jae Youn Hwang**, Jee-Hyeok Chung, Hyoun-Joong Kong, "Deep Learning-Based Diagnostic System for Velopharyngeal Insufficiency Based on Videofluoroscopy in Patients With Repaired Cleft Palates", *Journal of Craniofacial Surgery*, 2023
15. Kyungsu Lee, Haeyun Lee, Georges El Fakhri, Jorge Sepulcre, Xiaofeng Liu, Fangxu Xing, **Jae Youn Hwang**, Jonghye Woo, "Outlier Robust Disease Classification via Stochastic Confidence Network", *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2023 (Workshop).
16. Kyungsu Lee, Haeyun Lee, **Jae Youn Hwang***, "USIM Gate: Novel Attention-based UpSampling Interpolation Method for Segmenting Precise Boundaries of Target Objects", *International Conference on Artificial Intelligence and Statistics*, 2023
17. Kyungsu Lee, Sewoong Kim, Hah min Lew, Dong Hun Lee, and **Jae Youn Hwang***, "Fine-Tuning Network in Federated Learning for Personalized Skin Diagnosis", *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2023
18. Kyungsu Lee, Haeyun Lee, Jonghye Woo and **Jae Youn Hwang***, "Self-Supervised Domain Adaptive Segmentation for Breast Cancer using Test-Time Fine-Tuning", *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2023
19. Moon Hwan Lee, HeeYeon Park, Kyungsu Lee, Sewoong Kim, Jihun Kim, **Jae Youn Hwang***, "Ultrasound-optical imaging-based multimodal imaging technology for biomedical applications", *The Journal of the Acoustical Society of Korea*, 2023
20. Moon Hwan Lee, Hah Min Lew, Sangyeon Youn, Tea Kim, and **Jae Youn Hwang***, "Deep learning-based Framework for Fast and Accurate Acoustic Hologram Generation", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 2022
21. Haemin Kim , Sangyeon Youn , Jinwoo Kim , Sunghun Park , Moon Hwan Lee, **Jae Youn Hwang*** and Jinho Chang*, "Deep Laser Microscopy using Optical Clearing by Ultrasound-Induced Gas Bubbles", *Nature Photonics*, 2022 (Impact Factor 2022: 38.771, #1)
22. Kyungsu Lee, Moonhwan Lee, Hah Min Lew, Jun Young Kim, and **Jae Youn Hwang***, "CSS-Net: Classification and Substitution for Segmentation of Rotator Cuff Tear", *ACCV* 2022
23. Kyungsu Lee, Jaeseung Yang, Haeyun Lee, and **Jae Youn Hwang*** "Stochastic Adaptive Activation Function", *NeurIPS* 2022

24. Jeong Hyun Ha, Haeyun Lee, Seok Min Kwon, Hyunjin Joo, Guang Lin, Deok-Yeol Kim, Sukwha Kim, **Jae Youn Hwang**, Jee-Hyeok Chung, Hyoun-Joong Kong, Deep Learning-Based Diagnostic System For Velopharyngeal Insufficiency Based On Videofluoroscopy In Patients With Repaired Cleft Palate, *Journal of Clinical Medicine*, 2022 (**Top 22.78%**) (**Impact Factor 2020: 5.688**)
25. Haeyun Lee, Moon Hwan Lee, Sangyeon Youn, Kyungsu Lee, Hah Min Lew, **Jae Youn Hwang***, "Speckle Reduction via Deep Content-Aware Image Prior for Precise Breast Tumor Segmentation in an Ultrasound Image", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 2022.
26. Kyungsu Lee, Thiago. C. Cavalcanti, Sewoong Kim, Hah min Lew, Dong Hun Lee*, and **Jae Youn Hwang***, "Multi-Task And Few-Shot Learning-Based Fully Automatic Deep Learning Platform For Mobile Diagnosis Of Skin Diseases", *IEEE Journal of Biomedical and Health Informatics (JBHI)*, 2022, (**Top 7.76%**) (**Impact Factor 2022: 7.021**)
27. Kyungsu Lee, Jaeseung Yang, Moon Hwan Lee, Jin Ho Chang, Jun-Young Kim, and **Jae Youn Hwang**, "USG-Net: Deep Learning-based Ultrasound Scanning-Guide for an Orthopedic Sonographer", *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2022
28. Hye-yeon Cho, Kyungsu Lee, Hyun-Lim Yang, Chul-woo Jung, Hee-Pyoung Park, **Jae Youn Hwang**, and Hyoun-joong Kong, "Deep-learning model associating lateral cervical radiographic features with Cormack-Lehane grade 3 or 4 glottic view", *Anesthesia*, 2022 (Impact Factor: 12.893, 1.47%)
29. Haeyun Lee, Yongsoon Eun, **Jae Youn Hwang***, and Lucy Youngmin Eun* Explainable Deep Learning Algorithm For Distinguishing Incomplete Kawasaki Disease By Coronary Artery Lesions On Echocardiographic Imaging, *Computer Methods and Programs in Biomedicine*, 2022 (**Top 10.55%**) (**Impact Factor 2022: 7.027**)
30. Thiago C. Cavalcanti, Hah Min Lew, Kyungsu Lee, Sang-Yeon Lee, MooKyun Park*, and **Jae Youn Hwang***, "Intelligent Smartphone-Based Multimode Imaging Otoscope for the Mobile Diagnosis Of Otitis Media", *Biomedical Optics Express*, 12(12):7765-7779, 2021, (**Top 15.65%**) (**Impact Factor 2020: 3.732**) (**Spotlight on Optics**)
31. Seungyeop Lee, Lucy Youngmin Eun, **Jae Youn Hwang**, and Yongsoon Eun, "Ex Vivo Evaluation of Mechanical Anisotropic Tissues with High-Frequency Ultrasound Shear Wave Elastography", *Sensors* , 27;22(3):978, 2022 (**Top 22%**) (**Impact factor 2020: 3.576**)
32. Mincheol Park, Gia Minh Hoang#, Thien Nguyen, Eunkyung Lee, Hyun Jin

- Jung, Youngshik Choe, Moon Hwan Lee, **Jae Youn Hwang**, Jae Gwan Kim, Tae Kim, “Effects of transcranial ultrasound stimulation pulsed at 40 Hz on A β plaques and brain rhythms in 5 \times XFAD mice”, *Translational Neurodegeneration*, 7:10(1):48, 2021 (**Top 9.4%**) (**Impact factor 2021: 8.014**)
33. Jihun Kim, Hah Min Lew, Jung-Hee Kim, Sangyeon Youn, Hasan Al Faruque, An Na Seo, Soo Yeun Park, Jin Ho Chang, Enjoo Kim, and **Jae Youn Hwang***, “Forward-looking Multimodal Endoscopic System based on Optical Multispectral and High-frequency Ultrasound Imaging techniques for Tumor Detection”, *IEEE Transaction on Medical Imaging*, 40(2):594-606, 2021 (**Top 2.6%**) (**Impact factor 2020: 10.048**)
34. Kyungsu Lee, Haeyun Lee, **Jae Youn Hwang***, “Self-Mutating Network for Domain Adaptive Segmentation in Aerial Images”, *International Conference on Computer Vision (ICCV)*, 2021 (**Computer Vision Top Conference, Rank #2**)
35. Kyungsu Lee, Junhee Kim, Haeyun Lee, Juhum Park, Jihwan P. Choi*, **Jae Youn Hwang***, “Boundary-Oriented Binary Building Segmentation Model with Two Scheme Learning for Aerial Images”, *IEEE Transactions on Geoscience & Remote Sensing*, 2021, (**Top 6%**) (**Impact Factor 2019: 5.855**)
36. Haeyun Lee, Young Jun Chai, Hyunjin Joo, Kyungsu Lee, **Jae Youn Hwang**, Seok-Mo Kim, Kwangsoon Kim, Inn-Chul Nam, June Young Choi, Hyeong Won You, Myung-Chul Lee, Hiroo Masuoka, Akira Miyauchi, Kyu Eun Lee, Sungwan Kim, Hyoun-Joong Kong, “Federated Learning for Thyroid Ultrasound Image Analysis to Protect Personal Information: Validation Study in Real Healthcare Environment”, *JMIR Medical Informatics*, May 18:9(5):e25869, 2021 (**Top 29%**) (**Impact Factor 2018: 3.188**)
37. Seungyeop Lee, Lucy Youngmin Eun, **Jae Youn Hwang** and Yongsoon Eun, High-Frequency Ultrasound Shear Wave Imaging System for the Precise Analysis of Heart Mechanics Ex Vivo, *Journal of the Korean Society for Nondestructive Testing*, Vol. 41, No. 4: 223-231, 2021 (**KCI**)
38. Hah Min Lew, Heean Shin, Moon Hwan Lee, Sangyeon Youn, Hee Chan Kim, and **Jae Youn Hwang***, “Ultrasonic Blood Flowmeter with a Novel Xero Algorithm for a Mechanical Circulatory Support System”, *Ultrasonics*, 115:106457, 2021 (**Top 18%**) (**Impact Factor 2019: 3.065**)
39. Moon Hwan Lee and **Jae Youn Hwang***, “Development of deep learning-based holographic ultrasound generation algorithm (Deep-HUG)”, *The Journal of the Acoustical Society of Korea*, 41(2), 2021.
40. Kyungsu Lee, Jun Young Kim, MoonHwan Lee, Chang Huk Choi, and **Jae Youn Hwang***, “Imbalanced Loss-Integrated Deep-Learning-Based Ultrasound Image Analysis for Diagnosis of Rotator-Cuff Tear”, *Sensors*, 21: (6), 2214, 2021 (**Top**)

22%) (Impact Factor 2020: 3.576)

41. Haeyun Lee, Kyungsu Lee, Junhee Kim, Younghwan Na, Juhum Park, Jihwan P. Choi*, **Jae Youn Hwang***, “Local Similarity Siamese Network for Urban Use Change Detection on Aerial Images”, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 14, 4139, 2021 (Top 15%) (Impact Factor 2019: 3.827)
42. Jaesuk Choi, Yechan Park, Jung Bum Oh, Jun-Young Kim, **Jae Youn Hwang**, Sohmyung Ha, Chul Kim, Minkyu Je, “An Energy-Replenishing Ultrasound Pulser with 0.25CV2f Dynamic Power Consumption”, IEEE International Solid-State Circuits Conference, 2021 (Conference in Circuit, Rank #1)
43. Jaesuk Choi, Sangyeon Youn, **Jae Youn Hwang**, Sohmyung Ha, Chul Kim and Minkyu Je, “Energy-Efficient High-Voltage Pulsers for Ultrasound Transducers”, IEEE Transactions on Circuits and Systems II: Express Briefs, 68 (1), pp:19 - 23. 2021 (Top 30%) (Impact Factor 2018: 3.250)
44. Younghwan Na, Junhee Kim, Kyung Su Lee, Park, Juhum, **Jae Youn Hwang**, Jihwan Choi, “Domain Adaptive Transfer Attack (DATA)-based Segmentation Networks for Building Extraction from Aerial Images”, IEEE Transactions on Geoscience & Remote Sensing, 2020 (Top 6%) (Impact Factor 2019: 5.855)
45. Sangyeon Youn, Kyung Su Lee, Jihoon Son, In-Hwan Yang, **Jae Youn Hwang***, “Deep Learning-Based Fully-Automatic Intracellular Calcium Analysis for Determination of Invasion Potentials of Cancer Cells in an Acoustic Trap”, Biomedical Optics Express, 2020, (Top 15%) (Impact Factor 2018: 3.910)
46. Seunguk Kim, Jae Yeon Kim, Su Jin Heo, Jae Hoon Yang, Gowoon Son, Hyun Woo Jang, Jihwan P. Choi, **Jae Youn Hwang**, Cheil Moon, Jae Eun Jang, “Enhanced color sensitivity by coupling of surface plasmon and fabry-perot resonances for spectrometer-free and label-free biosensing”, Sensors and Actuators B, 2020, (Top 3%) (Impact Factor 2019: 7.100)
47. Moon Hwan Lee, Jun-young Kim, Kyung Su Lee, Chang-Hyuk Choi*, and **Jae Youn Hwang***, “Wide-field 3D Ultrasound Imaging Platform With a Semi-automatic 3D Segmentation Algorithm for Quantitative Analysis of Rotator Cuff Tears”, IEEE Access, 2020 (Top 15%) (Impact Factor 2018: 4.098)
48. Thiago Coutinho Cavalcanti, Sewoong Kim, Kyungsu Lee, Sang-Yeon Lee, Moo Kyun Park, and **Jae Youn Hwang***, “Smartphone-Based Spectral Imaging Otoscope: System Development and Preliminary Study for Evaluation of Its Potential as A Mobile Diagnostic Tool”, Journal of Biophotonics, 13:e201960213, 2020 (Top 13%) (Impact Factor 2017: 3.768)
49. Hyeyun Lee, Jinhyoung Park, and **Jae Youn Hwang***, “Channel Attention Module with Multi-scale Grid Average Pooling for Breast Cancer Segmentation

- in an Ultrasound Image”, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, (99), 2020 **(Top 18%) (Impact Factor 2018: 2.989)**
50. Felix Alonso-valenteen, Dustin Srinivas, Sayuri Pacheco, Altan Rentsendorj, David Chu, Jay Livow, Jessica Sims, **Jae Youn Hwang**, Ravinder Abrol, Lali K. Medina-Kauwe, “HER3-Targeted Protein Chimera Forms Endosomolytic Capsomeres And Self-Assembles Into Stealth Nucleocapsids For Systemic Tumor Homing Of RNA Interference In Vivo.”, Nucleic Acids Res. 2019 Dec 2;47(21):11020-11043 **(Top 4%) (Impact factor 2017: 11.561)**
 51. Sangyeon Yoon, Jin Woo Choi, Junsu Lee, Jihun Kim, In-Hwan Yang, Jin Ho Chang, Hee Chan Kim, **Jae Youn Hwang***, “Acoustic Trapping Technique for Studying Calcium Response of a Suspended Breast Cancer Cell: Determination of its Invasion potentials”, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Apr;66(4):737-746, 2019 **(Top 12%) (Impact factor 2016: 2.743)**
 52. **Jae Youn Hwang**, Sangyeon Yoon, In-Hwan Yang, ”Gravitational field flow fractionation: Enhancing the resolution power by using an acoustic force field”, Analytica Chimica Acta, Jan 24;1047:238-247, 2019, **(Top 9%) (Impact factor 2016: 4.950)**
 53. Sangyeon Yoon*, Kijoon Lee, Jae Gwan Kim, **Jae Youn Hwang**, “A Development Of A Multimodal Patch-Type Probe For Measuring Blood Flow And Oxygen Saturation In Carotid Artery”, The Journal of the Acoustical Society of Korea Vol.38, No.4, 2019
 54. Sewoong Kim, Minjoo Hwang, Manjae Kim, Jihun Kim, Seong Jin Jo, Minkyu Je, Jae Eun Jang, Dong Hun Lee, and **Jae Youn Hwang*** “Smartphone-based Multispectral Imaging and Machine learning based Analysis for Discrimination between Seborrheic Dermatitis and Psoriasis on the Scalp”, Biomedical Optics Express, 24;10(2):879-891, 2019 **(Top 15%) (Impact factor 2018: 3.910)**
 55. Soon Bin Kwon, Jeong-Ho Park, Chiheon Kwon, Hyung Joong Kong, **Jae Youn Hwang**, Hee Chan Kim, “An Energy-Efficient Algorithm for Classification of Fall Types Using a Wearable Sensor”, IEEE Access, 7:31321, 2019 **(Top 15%) (Impact factor 2018: 4.098)**
 56. Evgenii Kim, Eloise Anguluan, Sangyeon Yoon, Jihun Kim, **Jae Youn Hwang**, and Jae Gwan Kim, “Non-Invasive Measurement Of Hemodynamic Change During 8 Mhz Transcranial Focused Ultrasound Stimulation Using Near-Infrared Spectroscopy”, BMC Neuroscience, 18:20(1):12, 2019 **(Top 56%) (Impact factor 2019: 2.811)**
 57. Jihun Kim, Teojeon Shin, Hyun Joong Kong, **Jae Youn Hwang***, and Hong Geun Hyun*, “High-frequency Ultrasound Imaging for Examination of Early Dental

- Caries”, *Journal of Dental Research*, Mar:98(3):363-367, 2018 (**Top 2%**) (**Impact factor 2017: 5.383**)
58. Junhee Kim, Haeyun Lee, S. J. Hong, Sewoong Kim, Juhum Park, **Jae Youn Hwang***, and Jihwan P. Choi* “Object Segmentation from High Resolution Aerial Images Using U-Net with Pyramid Pooling Layers”, *IEEE Geoscience Remote Sensing Letter*, 2018 (**Top 22%**) (**Impact factor 2015: 2.228**)
 59. Hayong Jung, Robert Wodnicki, Hae Lim, Chi Woo Yoon, Bong Jin Kang, Changhan Yoon, Changyang Lee, **Jae Youn Hwang**, Hyung Ham Kim, Hojong Choi, Mike Chen, Qifa Zhou, K. Kirk Shung, “CMOS High Voltage Analog 1-64 Multiplexer/De-Multiplexer for Integrated Ultrasound Guided Breast Needle Biopsy”, *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 65 (8),1334, 2018 (**Top 12%**) (**Impact factor 2016: 2.743**)
 60. Sims JD, Taguiam JM, Alonso-Valenteen F, Markman J, Agadjanian H, Chu D, Lubow J, Abrol R, Srinivas D, Jain A, Han B, Qu Y, Mirzadehgan P, **Jae Youn Hwang**, Rentsendorj A, Chung A, Lester J, Karlan BY, Gray HB, Gross Z, Giuliano A, Cui X, Medina-Kauwe LK, “Resistance To Receptor-Blocking Therapies Primes Tumors As Targets For HER3-Homing Nanobiologics.”, *J Control Release*. 10:271:127-138, 2018 (**Top 4%**) (**Impact factor 2018: 7.901**)
 61. Jihun Kim, Jun-Young Kim, Anna Seo, Eunjoo Kim*, **Jae Youn Hwang***, “A Multimodal Biomicroscopic System based on High-frequency Acoustic Radiation Force Impulse and Multispectral Imaging Techniques for Tumor Characterization Ex vivo”, *Scientific reports*, Dec 13:7(1):17518, 2017 (**Top 8%**) (**Impact factor 2014: 5.578**)
 62. Youngjin Lee, Min-Kyu Park, Seunguk Kim, Jeong Hee Shin, Cheil Moon, **Jae Youn Hwang**, Jun-Chan Choi, Heewon Park, Hak-Rin Kim, and Jae Eun Jang, “Electrical Broad Tuning of Plasmonic Color Filter Employing an Asymmetric-Lattice Nanohole Array of Metasurface Controlled by Polarization Rotator”, *ACS Photonics*, 4(8), 1954-1966, 2017 (**Top 7%**) (**Impact factor 2015: 5.404**)
 63. Jaesuk Choi#, Jihun Kim#, **Jae Youn Hwang**, Minkyu Je, Jun-Young Kim, Shin-Yoon Kim, “A Novel Smart Navigation System for Intramedullary Nailing in Orthopedic Surgery”, *Plos One*, 12(4): e0174407, 2017. (**Top 15%**) (**Impact factor 2014: 3.234**)
 64. R.D. Teo, **Jae Youn Hwang**, J. Termini, Z. Gross, H.B. Gray, “Fighting Cancer with Corroles”, *Chemical Reviews*, 117 (4), pp 2711-2729, 2017 (**Top 1%**) (**Impact Factor 2016: 47.928**)
 65. Sewoong Kim, Dongrae Cho, Jihun Kim, Manjae Kim, Sangyeon Youn, Jae Eun Jang, Minkyu Je, Dong Hun Lee, Boreom Lee, Daniel L. Farkas, and **Jae Youn**

- Hwang***, "Smartphone-based multispectral imaging: system development and potentials for mobile skin diagnosis", *Biomedical Optics Express*, 7(12), pp 5294-5307, 2016 (**Top 8%**) (**Impact Factor 2013: 3.497**)
66. **Jae Youn Hwang***, Jihun Kim, Jin Man Park, Changyang Lee, Hayoung Jung, J. Lee*, K. Kirk Shung, "Cell Deformation by Single-beam Acoustic Trapping: A Promising Tool for Measurements of Cell Mechanics", *Scientific Reports*, 27238, May 2016 (**Top 8%**) (**Impact Factor 2014: 5.578**)
67. Yoon S, Kim MG, Chiu CT, **Jae Youn Hwang**, Kim HH, Wang Y, Shung KK "Direct and sustained intracellular delivery of exogenous molecules using acoustic-transfection with high frequency ultrasound", *Scientific Reports*, 4:6:20477, 2016 (**Top 8%**) (**Impact Factor 2014: 5.578**)
68. Jessica D. Sims, **Jae Youn Hwang**, Shawn Wagner, Felix Alonso-Valenteen, Chris Hanson, Jan Michael Taguiam, Richard Polo, Ira Harutyunyan, Gevorg Karapetyan, Karn Sorasaene, Ahmed Ibrahim, Eduardo Marban, Rex Moats, Harry B. Gray, Zeev Gross, Lali K. Medina-Kauwe, "A corrole nanobiologic elicits tissue-activated MRI contrast enhancement and tumor-targeted toxicity", *Journal of Controlled Release*, 217:92-101, 2015 (**Top 4%**) (**Impact Factor 2014: 7.705**)
69. **Jae Youn Hwang**, Chi Woo Yoon, Hae Gyun Lim, Jin Man Park, Sangpil Yoon, Jungwoo Lee, and K. Kirk Shung "Acoustic tweezers for studying intracellular calcium signaling in SKBR-3 human breast cancer cells", *Ultrasonics*, 63:94-101, 2015. (**Top 15%**) (**Impact Factor 2012: 2.028**)
70. Bong Jin Kang, Chang Hwan Yoon, Jin Man Park, **Jae Youn Hwang***, and K. Kirk Shung "Jitter reduction technique for acoustic radiation force impulse microscopy via photoacoustic detection", *Optics Express*, 20(15), 2015 (**Top 6%**) (**Impact Factor 2012: 3.546**)
71. **Jae Youn Hwang**, Dong Young Cheon, Hyunjune Shin, Hyun Bin Kim, and Jungwoo Lee, "Near-Field Acoustic Microbead Trapping As Remote Anchor for Single Cell Manipulation", *Applied Physics Letters*, 106, 183704, 2015, (**Top 15%**) (**Impact Factor 2013: 3.515**)
72. **Jae Youn Hwang**, Bong Jin Kang, Changyang Lee, Hyung Ham Kim, Jinhyoung Park, Qifa Zhou, and K. Kirk Shung, "Non-contact acoustic radiation force impulse microscopy via photoacoustic detection for probing breast cancer cell mechanics", *Biomedical Optics Express*, 6(1), 11-22, 2015 (**Top 8%**) (**Impact Factor 2013: 3.497**)
73. Bong Jin Kang, Jinhyoung Park, Jieun Kim, Hyung Ham Kim, Changyang Lee, **Jae Youn Hwang**, Ching-Ling Lien, and K. Kirk Shung, "High frequency dual mode pulsed wave Doppler imaging for monitoring the functional

- regeneration of adult zebrafish hearts”, *J. R. Soc. Interface*, 12(103), 2015 (**Top 9%**) (**Impact Factor 2012: 4.907**)
74. **Jae Youn Hwang***, Hae Gyun Lim, Chi Woo Yoon, Kwok Ho Lam, Sangpil Yoon, Changyang Lee, Chi Tat Chiu, Bongjin Kang, Hyung Ham Kim, and K. Kirk Shung, “Non-contact high-frequency ultrasound microbeam stimulation for studying mechanotransduction in human umbilical vein endothelial cells”, *Ultrasound in Medicine and biology*, 40(9), 2172-82, 2014 (**Top 12%**) (**Impact Factor 2012: 2.455**)
 75. Changyang Lee, Jong Seob Jeong, **Jae Youn Hwang**, Jungwoo Lee, and K. Kirk Shung, “Non-contact multi-particle annular patterning and Manipulation with ultrasound microbeam”, *Applied Physics Letters*, 104, 24417, 2014 (**Top 14%**) (**Impact Factor 2011: 3.844**)
 76. Jae Youn Hwang, Changyang Lee, Kwok Ho Lam, Hyung Ham Kim, Jung Woo Lee, and K. Kirk Shung, “Cell Membrane Deformation Induced by Fibronectin-coated Polystyrene Microbead in 200 MHz Acoustic Trap”, *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 16(4), pp 399-406, 2014. (**Top 19%**) (**Impact Factor 2011: 1.694**)
 77. Hojong Choi, Min Gon Kim, Tommas Cummins, **Jae Youn Hwang**, and K. Kirk Shung, “Power MOSFET-Based Limiter for High Frequency Ultrasound Systems”, *Ultrasonic Imaging*, 36(4), 317-30, 2014. (**Top 32%**) (**Impact Factor 2011: 1.543**)
 78. Ying Li, Jae Youn Hwang, Jung Woo Lee, and K. Kirk Shung, “Single beam acoustic tweezers: A new tool for microparticle manipulation”, *Acoustic Today*, 9(4), pp10-13, 2013.
 79. **Jae Youn Hwang**, Nan Sook Lee, Changyang Lee, Kwok Ho Lam, Jonghye Woo, Ming-Yi Lin, Cassandra Kisler, Hyung Ham Kim, Qifa Zhou, Robert H. Chow, and K. Kirk Shung, “Investigating Contactless High Frequency Ultrasound Microbeam Stimulation for Determination of Invasion Potential of Breast Cancer Cells”, *Biotechnology and Bioengineering*, 110 (10), pp 2697-05, 2013.
 80. **Jae Youn Hwang**, Daniel L. Farkas, and Lali K. Medina-Kauwe, “Analysis of Targeted Viral Protein Nanoparticles Delivered to HER2+ Tumors”, *Journal of Visualized Experiments*, (76) e50396, 2013.
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 87. **Jae Youn Hwang**, Jay Lubow, David Chu, Jun Ma, Hasmik Agadjanian, Harry B. Gray, Zeev Gross, Daniel L. Farkas, and Lali K. Medina-Kauwe "A Mechanistic Study of Tumor-Targeted Corrole Cytotoxicity", *Molecular Pharmaceutics*, 8(6), pp 2233-2243, 2011.
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 89. **Jae Youn Hwang**, Sebastian Wachsmann-Hogiu, V Krishnan Ramanujan, Andreas G. Nowatzky, Yosef Koronyo, Lali K. Medina-Kauwe, Zeev Gross, Harry B Gray, and Daniel L. Farkas, "Multimodal Wide-field Two-photon Excitation Imaging: Characterization of the Technique for In Vivo Applications", *Biomedical Optics Express*, 2(2), pp 356-64, 2011.
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 94. Ran-a Jeong, **Jae Youn Hwang**, Seyeong Joo, Sejin Park, Taek Dong Chung, Won-Yong Lee and Hee Chan Kim, “In Vivo Calibration of The Subcutaneous Amperometric Glucose Sensors Using A Nonenzyme Electrode”, *Biosensors & Bioelectronics* 19(4), pp 313-319, 2003.

(*: **Corresponding Author**)

● **Proceedings**

1. Manjae Kim, Sewoong Kim, Minjoo Hwang, Jihun Kim, Jae Eun Jang, Dong Hun Lee and **Jae Youn Hwang**, “Multispectral imaging based on a Smartphone with an External C-MOS camera for Detection of Seborrheic Dermatitis of a Scalp”, *Proc. of SPIE*, Vol 10068, 2017.

Before DGIST

2. **JaeYoun Hwang**, Zeev Gross, Harry B. Gray, Lali K. Medina-Kauwe, and Daniel L. Farkas, “Multimode Optical Imaging for Translational Chemotherapy: In Vivo Tumor Detection and Delineation by Targeted Gallium Corroles”, *Proc. of SPIE*, Vol 7902, 790213G:1-8, 2011.
3. **JaeYoun Hwang**, Jay Lubow, David Chu, Zeev Gross, Harry B. Gray, Daniel L. Farkas, and LaliK. Medina-Kauwe, “Investigating the Photosensitizer-potential of Targeted Gallium Corrole using Multimode Optical Imaging”, *Proc. of SPIE*, Vol 7886, 788621G:1-6, 2011.
4. **JaeYoun Hwang**, Hasmik Agadjanian, Lali K. Medina-Kauwe, Zeev Gross, Harry B. Gray, Karn Sorasaene, Daniel L. Farkas, “Large Field of View Scanning

Fluorescence Lifetime Imaging System for Multimode Optical Imaging of Small Animals”, Proc. of SPIE, Vol 6859, 68590G:1-8, 2008.

5. Jihoon Jeong, Philip K. Frykman, Mark Gaon, Alice Chung, Erik Lindsley, **Jae Youn Hwang**, Daniel L. Farkas, “Intelligent Spectral Signature Bio-imaging In Vivo for Surgical Applications”. Proc. of SPIE, Vol. 6411, 64411N:1-8, 2007.
6. Sebastian Wachsmann-Hogiu, **Jae Youn Hwang**, Erik Lindsley, Daniel L. Farkas, “Wide-field Two-photon Microscopy: Features and Advantages for Biomedical Applications”, Proc. of SPIE, Vol. 6441, 64411B:1-8, 2007.
7. **Jae Youn Hwang**, C. Moffatt-Blue, Oslem Equils, Manabu Fujita, Jihoon Jeong, N. M. Khazenzon, Erik Lindsley, Julia Ljubimova, Andreas G. Nowatzky, Daniel L. Farkas, and Sebastian Wachsmann-Hogiu, “Multimode Optical Imaging of Small Animals: Development and Applications”, Proc. of SPIE, Vol. 6441, 644105:1-10,2007.
8. Yongwon Jang, **Jae Youn Hwang**, Jaemin Kang, and Hee Chan Kim, “A Study of a Real-Time Monitoring System Using Bluetooth for Fall Detection in the Elderly”, 2004 KOSOMBE conference, Seoul, Korea, Apr 30, 2004.
9. **Jae Youn Hwang**, Jae Min Kang, Yong Won Jang, and Hee Chan Kim, “Development of a Novel Algorithm and a Real-time Monitoring Ambulatory System Using Bluetooth Modules for Fall Detection in the Elderly”, Proc. IEEE Engineering in Medicine and Biology Society. 3, 2204 –2207, 2004.
10. **Jae Youn Hwang**, Seyeong Joo, Hee Chan Kim, and Seoung Jun Oh, “Active Estimation of Residual Urine Volume by measurement of Sagittal Depth in a bladder ultrasound image”, 2002 KOSOMBE conference, Kwangju, Korea, Nov 15, 2002.
11. Duck Keun Park, Hyun Seock Moon, **Jae Youn Hwang**, and Hee Chan Kim, “Development of a Constrain-free Health Monitoring System using Bluetooth Wireless Transmission”, 2001 KOSOMBE conference, Nov 16, 2001.
12. **Jae Youn Hwang and** Hee Chan Kim, “Development of a Heart Rate and Body-fat Measurement System for Home Healthcare Aid”, 2001 KOSOMBE conference, Seoul, Korea, Nov 16, 2001.

- **Book Chapter**

1. Jihun Kim, Sangyeon Yoon and **Jae Youn Hwang**, "Imaging Technologies and Transdermal Delivery in Skin Disorders, Ultrasound Imaging in Dermatology, Wiley, 2020
2. Kyungsu Lee, Haeyun Lee, and **Jae Youn Hwang**, "Computational Intelligence and Image Processing for Medical Applications", WSPC 2022
3. S Lee, H Kim, MH Lee, Y Eun, **Jae Youn Hwang**, "High-Frequency Ultrasound Techniques for Measurement of Cell and Tissue Mechanics", Integration and Bridging of Multiscale Bioengineering Designs and Tissue, Springer Nature 2025

B. Talks and Seminars Presented

i. Invited talks at International Meeting

1. **Jae Youn Hwang**, "**Intelligent mobile multimodal optical imaging and analysis framework using smartphone and deep feature fusion**", SPIE Optics and Photonics, 2025
2. **Jae Youn Hwang**, "Translational Multimodal High-Frequency Ultrasound Endoscopic Imaging for Detection of Colorectal Tumors", The 50th Annual Congress of the Korean Society of Ultrasound in Medicine (KSUM), 2019
3. Thiago Cavalcanti, Sewoong Kim, **Jae Youn Hwang**, "Smartphone-Based Multispectral Imaging Oscope For The Diagnosis Of Otitis Media", SPIE Photonics West, Bios, 2019
4. **Jae Youn Hwang**, "High-Frequency Ultrasound Microbeam Techniques: From Cell Manipulation To Phenyotyping", 2017 International Congress on Ultrasonics, 2017
5. **Jae Youn Hwang**, "Smartphone-Based Multispectral Imaging And Analysis Toward Mobile Diagnosis Of Various Skin Diseases", International Multidiscipline Conference on Optofluidics, 2017
6. **Jae Youn Hwang**, "High-Frequency Single-Beam Acoustic Trapping Potential for Cell Characterizations", 13th Annual Ultrasonic Transducer Engineering Conference, 2016
7. **Jae Youn Hwang**, "Smartphone-based Mobile Multispectral Imaging System for Skin Care and Management", International Symposium on Embedded Technology, 2015
8. **Jae Youn Hwang**, "Development of a Smartphone-attached Multispectral Imaging System for Mobile Quantitative Monitoring of Skin Lesions", SPIE-NBSIS, 2015
9. **Jae Youn Hwang**, "High-frequency Ultrasound Microbeam Techniques for Measurement of Cell Mechanics", The International Biomedical Engineering Conference (IBEC), 2015

10. **Jae Youn Hwang**, "Multimodal Endoscopic Imaging System for Detection of Gastric Lesions", The International Biomedical Engineering Conference(IBECE), 2015
11. **Jae Youn Hwang**, "High-Frequency Ultrasound Microbeam Toward Cancer Research", Annual Congress of Korean Society of Ultrasound in Medicine, 2014
12. **Jae Youn Hwang**, "Investigating Applications of High-frequency Ultrasound Microbeam Stimulation for the Study of Cell Mechanotransduction", 12th Annual Ultrasonic Transducer Engineering Conference, 2014

ii. Invited talks at National Meeting

1. **Jae Youn Hwang**, "Intelligent Mobile Spectral Imaging and Analysis", Photonics Conference, 2019
2. **Jae Youn Hwang**, "Mobile Multispectral Imaging System for Skin-Care", Annual Biophotonics Conference, 2015
3. **Jae Youn Hwang**, "High-Frequency Ultrasound Microbeams Toward Cancer Research", The Korea Society of Medical and Biological Engineering (KOSOMBE), 2015
4. **Jae Youn Hwang**, "High-Frequency Ultrasound Applications In Medicine And Biology", RF Analog workshop, 2015

iii. Invited Seminars

1. **Jae Youn Hwang**, "Multimodality Imaging System And Analysis Toward Cancer Research", Dongguk University, DMIC, 2014
2. **Jae Youn Hwang**, "Ultra-High Frequency Ultrasound Microbeam Stimulation Of A Single Cell In Mechanotransduction Study", Sogang University, CMSR, 2014
3. **Jae Youn Hwang**, "High-Frequency Ultrasound For Precise Diagnosis Of Cancer", the Korean Society for Nondestructive Testing Editorial Board Symposium, 2019
4. **Jae Youn Hwang**, "High-Frequency Ultrasound For Precise Cancer Diagnosis", Chungnam University, Institute of Biomedical Engineering, 2019
5. **Jae Youn Hwang**, "Smartphone-Based Spectral Imaging Oscope For The Diagnosis Of Otitis Media", Korean Otological Society Seminar, 2019
6. **Jae Youn Hwang**, "High-Frequency Ultrasound Techniques: Into The Precise Cancer Diagnosis", Korea University, Biomedical Engineering Seminar, 2019

7. **Jae Youn Hwang**, "High-Frequency Ultrasound And Optical Spectral Imaging In Dermatology", Seoul National University Hospital, Department of Dermatology, 2019

C. Patents

1. Ultrasound Imaging System For Analysing Body Composition And Operation Method Of The Ultrasound Imaging System, Application No, 17-458737, 2021-08-27, USA, Application No 10-2020-0113043, 2020-09-04, Korea
2. Probe And System For Imaging Dental Structure Comprising The Same, Application No 16-839444, 2020-04-03, USA
3. Smart Screw, Application No 16-467829, 2019-06-07, USA
4. Multispectral Imaging Device, Application No 16-082812, 2018-09-06, USA
5. Position Indicating Apparatus And Bone Fixation Apparatus Including The Same, Application No 15-561854, 2017-09-26, Registration No 10-925-686, 2021-02-23, USA
6. Mobile-Based Spectrum Imaging Device And Method For Controlling Same, Application No 15-738116, 2017-12-19, Registration No 10-470-664, 2019-11-12, USA
7. Mobile Multi-Spectral Imaging Device, User Terminal For Acquiring Multi-Spectral Image, Spectral Image Analysis Server And Method Thereof , Application No 15-559733, 2017-09-19, Registration No 10-539-463, 2020-01-21, USA
8. Ultrasonic Phantom Device For Performance Evaluation Of Rotary Ultrasonic Probe , Application No 10-2020-0110175, 2020-08-31, Korea
9. Ultrasound Imaging System For Analysing Body Composition And Operation Method Of The Ultrasound Imaging System, Application No 10-2020-0113043, 2020-09-04, Korea
10. Three-Dimensional Diagnostic System, Application No 10-2019-0141198, 2019-11-06, Korea
11. Ultrasonic Blood Flow Measuring Apparatus And Method Thereof, Application No 10-2021-0062321, 2021-05-14, Korea
12. Mobile Otoscope System, Application No 10-2021-0049885, 2021-04-16, Korea
13. Bladder Monitoring Apparatus And Method For Controlling Bladder Monitoring Apparatus, Application No 10-2020-0145463, 2020-11-03, Korea
14. Imaging System, Application No 10-2020-0083920, 2020-07-08, Korea
15. Otoscope And Operating Method There Of, Application No 10-2017-0061708,

- 2017-05-18, Registration No 10-1769268, 2017-08-10, Korea
16. Mobile Spectral Imaging System and Method, Application No 10-2016-0152852, 2016-11-16, Registration No 10-1881661, 2018-07-18, Korea
 17. Spectral Imaging Device, Control Device And Spectral Imaging System And Method For Controlling Light Of Spectral Imaging Based On Mobile, Application No 10-2015-0088581, 2015-06-22, Registration No 10-1769201, 2017-08-10, Korea
 18. Portable Spectral Imaging Device, User Mobile Terminal, Method And Software Program For Diagnosis And Management Of Skin, Application No 10-2014-0125926, 2014-09-22, Registration No 10-2268706, 2021-06-18, Korea
 19. Probe And System For Imaging Dental Structure Comprising The Same, Application No 10-2019-0039574, 2019-04-04, Registration No 10-2235372, 2021-03-29, Korea
 20. Otoloscope Based On Mobile Devices, Control Device, Spectral Imaging System And Analysis Method For Diagnosing Otitis Media Based On Mobile Devices, Application No 10-2015-0127801, 2015-09-09, Registration No 10-1751969, 2017-06-22, Korea
 21. Apparatus For Color Tunable Optical Shutter Using Structural Color Filter, Application No 10-2015-0129064, 2015-09-11, Registration No 10-1719253, 2017-03-17, Korea
 22. Mobile Multispectral Imaging Device, User Mobile Device Connection, Image Analysis Software In A Connected Server For Skin Healthcare, Application No 10-2015-0047689, 2015-04-03, Registration No 10-1718517, 2017-03-15, Korea
 23. Device And Method Which Able To Visually Observe The Composite Material Of The Transparent Colorless, Application No 10-2016-0037014, 2016-03-28, Registration No 10-1706180, 2017-02-07, Korea
 24. Bio Material Detecting System And Detecting Method, Application No 10-2018-0130237, 2018-10-29, Registration No 10-2134343, 2020-07-09, Korea
 25. Illumination System Attachable To A Mobile Device For Multispectral Imaging Of Skin Regions, Application No 10-2016-0027156, 2016-03-07, Registration No 10-1799184, 2017-11-13, Korea
 26. Portable Spectral Imaging Device, User Mobile Terminal, Server, Method And Software Program For Diagnosis And Management Of Skin, Application No 10-2015-0047686, 2015-04-03, Registration No 10-1670433, 2016-10-24, Korea
 27. An Apparatus For Indicating A Target Position And An Apparatus For Fixation Of A Fractured Bone Incorporating The Same, Application No 10-2016-0071281, 2016-06-08, Registration No 10-1800124, 2017-11-15, Korea

28. An Apparatus Fixing The Bones And A System Incorporating The Same, Application No 10-2016-0071297, 2016-06-08, Registration No 10-1800125, 2017-11-15, Korea
29. Ultrasound Surgery Drill And Drilling Method Thereby, Application No 10-2016-0051089, 2016-04-26, Registration No 10-1795928, 2017-11-02, Korea
30. Device And System For Sensing Biological Signal, Application No 10-2018-0056608, 2018-05-17, Registration No 10-2121192, 2020-06-04, Korea
31. Light Multiplexer And Spectral Imaging Apparatus, Application No 10-2018-0152998, 2018-11-30, 10-2113203, 2020-05-14, Korea
32. Multi-Modal Fusion Endoscope System, Application No 10-2017-0181218, 2017-12-27, 10-2047247, 2019-11-15, Korea
33. Spectral Imaging Device, Sysem For Analysing Skin Using Spectral Imaging And Method For Recommending Cosmetic Using Spectral Imaging, Application No 10-2017-0171427, 2017-12-13, Registration No 10-2032193, 2019-10-08, Korea
34. Shoes For Estimating Biological Information And System Comprising The Same, Application No 10-2018-0031535, 2018-03-19, Registration No 10-2029576, 2019-09-30, Korea
35. Smart Screw, Application No 10-2016-0167921, 2016-12-09, Registration No 10-1972207, 2019-04-18, Korea
36. Wearable Device Monitoring Residual Urine Volume In Bladder Using Ultrasonic Wave And Method Of Monitoring Residual Urine Volume In Bladder Using Ultrasonic Wave, Application No 10-2018-0045598, 2018-04-19, Registration No 10-1930883, 2018-12-13, Korea
37. Portable Spectral Imaging Device, User Mobile Terminal, Method And Software Program For Diagnosis And Management Of Skin, Application No 10-2016-0093509, 2016-07-22, Registration No 10-1922137, 2018-11-20, Korea
38. Smart Hip Joint Implant with linear wear monitoring, Application No 2021-009344, 2021-07-14, Korea
39. Cell Stimulation And Culture Platform Using Ultrasonic Hologram, Application No 10-2021-0132152, 2021-10-06, Korea
40. Imaging System, Application No PCT-KR2021-008481, 2021-07-05, PCT
41. Intelligent 3D Endoscopic Apparatus, Application No PCT-KR2020-015460, 2020-11-06, PCT
42. Bone Fixing Apparatus And System Comprising Same, Application No PCT-KR2017-005949, 2017-06-08, PCT

43. Location Marking Apparatus And Bone Fixing Apparatus Comprising Same, Application No PCT-KR2017-005937, 2017-06-08, PCT
44. Multi-Spectral Imaging Device, Application No PCT-KR2017-002423, 2017-03-07, PCT

D. Software Registration

1. Federated Learning Method in Real Medical Environments, C-2020-052221, 2020-12-24, Korea
2. Explainable Artificial Intelligence for Key Object Detection during Robot Surgery, C-2020-053305, 2020-12-29, Korea
3. AI-based Automatic Detection of Parathyroid Location During Robot Surgery, C-2020-053304, 2020-12-29, Korea

E. Grants and Contract

i. Current (Principal investigator/Co-Principal investigator: ₩28,852,916,000 (DGIST Income: ₩ 5,620,362,500))

1. Development of a low-voltage driving CMUT-based ring-type ultrasound imaging sensor for a next-generation medibot, 09.01.2020~12.31.2022, Korea Medical Device Development Fund, ₩760,000,000 (₩225,000,000, DGIST), **Principal investigator**
2. Improvement of Deep Learning-based Segmentation Techniques of Remote Sensing Images, 02.01.2022~12.31.2022, Dabeoo, ₩50,000,000 (₩50,000,000, DGIST), **Principal investigator**
3. Development of Application and Back-end Algorithm for Animal Skin Analysis, 03.01.2022~04.30.2022, Biplane, ₩10,000,000 (₩10,000,000, DGIST), **Principal investigator**
4. Development of an elderly-friendly wearable smart healthcare system and service for real-time quantitative monitoring of urination and defecation disorders, 04.01.2021~12.31.2024, Korea Evaluation Institute of Industrial Technology, ₩3,617,700,000 (₩837,400,000, DGIST), **Co-Principal investigator**
5. Development of a Multimodal Cell Imaging System for the Determination of Invasion Potentials of Cancer Cells toward Personalized Cancer Therapy, 03.01.2021~02.28.2022, National Research Foundation of Korea (NRF), ₩300,000,000, **Principal investigator**
6. Development of non-invasive stimulation method and pain biomarker for neuropathic pain, 01.01.2021~12.31.2021, GIST, ₩5,373,000,000 (₩276,000,000,

DGIST), **Co-Principal investigator**

7. Intelligent spectral/fluorescence/3D Imaging-based mobile otoscope system with a smartphone, 2021.05~2022.01, National Research Foundation of Korea (NRF), ₩50,000,000, **Co-Principal investigator**
8. Development of Multi-object tracking technique and Enhancement of a geographic data construction system based on deep learning, 07.01.2021.07~12.31.2021, Dabeoo, ₩50,000,000, **Principal investigator**
9. Development of Ultrasound Image Reconstruction Technique for a developed CMUT Array, 07.01.2021~12.31.2021, Endofin, ₩30,000,000, **Principal investigator**
10. Medial Image Analysis using AI Technique, 03.01.2021 ~ 12.31.2021, Changnyeong Ogya High School R&E Program, ₩6,500,000, **Principal investigator**
11. Development Of Multi-Modal Sensing And Control For Brain Functional Homeostasis, 11.01.2017~12.31.2022, National Research Foundation of Korea (NRF), ₩10,830,000,000, ₩8,429,757,000, Co-investigator

iii. Completed

12. Development Of A Smartphone-Based Mobile Healthcare Imaging System For Skin Care, 12.01.2014 ~ 11.31.2019, National Research Foundation of Korea (NRF) ₩1,500,000,000, **Principal investigator**
13. Advanced geographic data construction system based on deep learning , 06.01.2020~02.28.2021, Dabeoo, ₩50,000,000, Co-Investigator
14. Development of a prototype for an ultrasound capsule-type endoscope system , 2020.01~2021.03, Endofin, ₩70,000,000, **Principal investigator**
15. AI image transformation platform-based Geoinformation Generation and development of its application service, 01.31.2019.01~12.31.2019, Institute of Information & Communications Technology Planning & Evaluation ₩110,000,000, **Co-Principal investigator** & Co-Investigator
16. Ultrasound transducer fabrication and Scanning technique development for a capsule-type ultrasound endoscope, 08.01.2018~03.31.2019, Endofin, ₩46,000,000, **Principal investigator**
17. Development of an AI convergence multimodal imaging endomicroscope for on-site diagnosis, 05.01.2018~12.31.2018, Korea Evaluation Institute of Industrial Technology, ₩314,800,000, Co-investigator
18. Study on Ultrasound Transducer Fabrication and Ultrasound Imaging Systems for Ultrasound Medical Imaging, 2018.03~2018.12, Changnyeong Ogya High School R&E Program, ₩7,500,000, **Principal investigator**

19. Digital Map Generation Fusion Technique based on Deep learning and Image Processing, 03.01.2018~08.31.2018.08, Dabeoo, ₩30,000,000, Co-Investigator
20. Development of Ultrasound-Assisted Confocal Microscopy for Deep Tissue Imaging, 2017.12~2020.02, Samsung Science & Technology Foundation, ICT Convergence ₩1,400,000,000 (₩479,987,500, DGIST), **Co-Principal investigator** & Co-Investigator
21. Smart Monitoring System for Hip Implant Liner, 12.01.2017~05.31.2021, Korea Evaluation Institute of Industrial Technology, ₩13,942,016,000 (₩551,775,000, DGIST), **Co-Principal investigator**, Co-Investigator
22. Development of an ultrasound imaging system design and prototype using an RF transceiver-based capsule endoscope, 10.01.2017.10~03.31.2018, Intromedic, ₩18,000,000, **Principal investigator**
23. Development and implementation of a skin diagnosis algorithm, 10.01.2017.10~10.31.2018., Korea Technology and Information Promotion Agency for SMEs, ₩50,000,000, **Co-Principal investigator**
24. "(R&E) Development of an ultrasound imaging system and signal processing algorithms for cancer diagnosis, 2017.03~2017.12, Daegu Science High School R&E Program, ₩11,000,000, **Principal investigator**
25. (HRHR) Development of a multimodal fusion endoscope for molecular diagnosis of tumors, 01.01.2017~12.31.2017, DGIST, ₩170,000,000, Co-investigator
26. Development of a mobile multispectral imaging and analysis technique based on a smartphone for detection of various diseases, 03.01.2016~12.31.2016, Daegu Science High School R&E Program, ₩11,000,000, **Principal investigator**
27. Development of a noncontact cell elastographic imaging system based on acoustic radiation force impulses for measurement of mechanics of suspended/cultured cells, 03.01.2017~02.29.2020, the National Research Foundation of Korea (NRF), ₩300,000,000, **Principal investigator**
28. Study on a high-frequency ultrasound technique and system for quantification of the invasion potential of a cancer cell, 11.01.2014~04.31.2017, National Research Foundation of Korea (NRF), ₩125,000,000, **Principal investigator**
29. Wearable sensor system for cardiopulmonary fitness and personalized healthcare, 11.01.2014~04.31.2018, Samsung Science & Technology Foundation, ICT Convergence, ₩700,000,000 (₩240,000,000, DGIST), **Co-Principal investigator**
30. Next-Generation Surgical Navigation Solution Based on Multi-Modal Sensors and Mixed Reality for Arthroplasty, 10.17.2016~12.31.2017, Ministry of Science,

ICT and Future Planning, ₩215,200,000, **Co-Principal investigator**

31. Development of ultrasound and optical combined system to provide a guideline of performing cardiopulmonary resuscitation 03.01.2016~12.31.2016, GIST, ₩50,000,000, **Co-Principal investigator**
32. Convergence Research on Core Technologies for the Ubiquitous Green-Bio Complex, 03.01.2015~12.31.2016, DGIST, ₩700,000,000, Co-investigator
33. Development of a smartphone-based portable spectral imaging system for detection of skin diseases, 06.01.2014~12.31.2014, DGIST, ₩50,000,000, Co-investigator

Before DGIST

34. In vivo Imaging and Mechanism of Tumor-targeted Corroles, 10.01.2011~02.29.2012, Clinical Translational Science Institute (NIH: Cedars-Sinai site), \$20,000, **Principal Investigator**
35. Tumor Targeted Corroles for Detection and Intervention 02.05.2010~02.04.2015, NIH/NCI(1 R01 CA140995), \$1,500,000, Co-Investigator

***Underline: DGIST Income from other funding agencies during the project period.**

E. Technology Transfer (A total of Initial Payment: ₩1,300,000,000, Mean Running Royalty: 3.25%/Sales)

1. Imaging Apparatus And Analysis Technique For Quantitative Analysis Of Biological Tissues, Medivelbio, Initial Payment:₩15,000,000, Running Royalty: 3%/Sales
2. Imaging Device And Analysis Technique For Tissue Color Analysis, JIT Group, Initial Payment:₩15,000,000, Running Royalty: 5%/Sales
3. Skin Analysis Technique For Skin Healthcare, Lilicover, Initial Payment: ₩40,000,000, Running Royalty: 2%/Sales
4. Mobile Spectral Imaging System And Analysis Technique For Skin Healthcare, Medivelbio, Payment:₩60,000,000, Running Royalty: 3%/Sales

3. TEACHING, MENTORING, & ADVISING

A. Courses Taught

- **2021**
 - Digital Signal Processing
 - Biomedical Signal Processing
- **2019**

- Advanced Medical Imaging Technology
- Introduction to Multiscale Imaging for Convergence Research
- Digital Signal Processing
- **2018**
 - Electrical Engineering I
 - Introduction to Multiscale Imaging for Convergence Research
 - Biomedical Signal Processing
 - Digital Signal Processing
 - Physiology for Convergence
- **2017**
 - Advanced Medical Imaging Technology
 - Introduction to Multiscale Imaging for Convergence Research
 - Physiology for Convergence
 - Electrical Engineering I
 - Digital Signal Processing
- **2016**
 - Digital Signal Processing
 - Biomedical Signal Processing
 - Physiology for Convergence
 - Introduction to Multiscale Imaging for Convergence Research
 - Electrical Engineering I
- **2015**
 - Digital Image Processing
 - Physiology for Convergence
 - Introduction to Multiscale Imaging for Convergence Research
 - Digital Signal Processing
- **2014**
 - Digital Signal Processing
 - Biomedical Signal Processing

B. Advising: Other Than Research Direction

1. 2021.08.20., Choi, Dong Ju, B.S.
2. 2021.08.20., Kim, Yu Ji, B.S.
3. 2021.02.18., Woo, Ji Hyun, B.S.
4. 2021.02.18., Yang, Gi Ho, B.S.

C. Advising: Research Direction

I. Awards,

1. Ryu, Harmin (Ph.D. Candidate), Best Paper Award, The Korean Society of Medical & Biological Engineering, 2021
2. Ryu, Harmin (Ph.D. Candidate), Best Paper Award, DGIST ICE Student Conference, 2021
3. Lee, Moon Hwan (Ph.D. Candidate), Best Paper Award, DGIST ICE Student Conference, 2021
4. Yoon, Sangyeon (Ph.D. Candidate), Best Presentation Award, The Acoustical Society of Korea, 2020
5. Yoon, Sangyeon, (Ph.D. Candidate), Best Poster Award, The Korean Society of Medical & Biological Engineering, 2020
6. Kim, Jihun (Ph.D.), Best Researcher Award, DGIST, 2018
7. Kim, Jihun (Ph.D.), Best Researcher Award, DGIST, 2017
8. Yoon, Sangyeon (Ph.D. Candidate), Best Poster Award, DGIST, 2017
9. Hwang, Min Joo (M.S.), Best Poster Award, DGIST, 2017
10. Kim, Sewoong (Ph.D. Candidate), U&I Best Paper Award, 2016 Korean Society of Biomechanics Conference, 2016
11. Kim, Man Jae (M.S.), Best Poster Award, 2016 Korean Society of Biomechanics Conference, 2016
12. Kim, Man Jae (M.S.), Best Poster Award, The Korea Society of Medical and Biological Engineering (KOSOMBE) Conference, 2016
13. Kim, Sewoong (Ph.D. Candidate), Best Paper Award, The Korea Society of Medical and Biological Engineering (KOSOMBE) Conference, 2015
14. Park, Jin Man (M.S.), Outstanding Poster Award, The Korea Society of Medical and Biological Engineering (KOSOMBE) Conference, 2015
15. Kim, Jihun(Ph.D.), Best, Poster Award, The Acoustical Society of Korea conference, 2015

16. Kim, Jihun(Ph.D.), Outstanding Poster Award, DGIST ICE Student Conference, 2015

ii. Graduate Students

- **Ph.D. Degree**

1. Kim, Jihun, Ph.D., 2019, Current Affiliation: Postdoctoral Researcher at University of Illinois Urbana-Champaign,
2. Yoon, Sangyeon, Ph..D, 2023, Samsung Electronics
3. Lee, Haeyun, Ph..D, 2022, Samsung SDI
4. Lee, Kyungsu, Ph..D, 2023, Postdoctoral Researcher at DGIST

- **M.S Degree**

1. Son, Jihoon, M.S., 2021, Current Affiliation: Mando
2. Park, Jungho, M.S., 2019, Current Affiliation: Hanhwa Systems
3. Lee, Haeyun, M.S., 2018, Current Affiliation: DGIST Ph.D. Student
4. Hwang, Minjoo, M.S., 2018, Current Affiliation:Samsung Electronics
5. Yoon, Sangyeon, M.S, 2018, DGIST Current Affiliation: Ph.D. Student
6. Kim, Manjae, M.S.,, 2017, Current Affiliation: LG Display
7. Park, Jin Man, M.S., 2016, Current Affiliation: Hyundai Robotics
8. Lim, Heesung, M.S., 2016, Current Affiliation: UL Korea
9. Jung, Hae Rim, M.S., 2016, Current Affiliation: CJ Olive Networks
10. Lee, Hong Jae, M.S., 2016, Current Affiliation: Korea Investment & Securities Co.,Ltd.
11. Yoon, Sehyo, M.S., 2016, Current Affiliation: Seoul Semiconductor

4. SERVICE

A. Editorships, Editorial Boards, and Reviewing Activities for Journals

- **Reviewing Activities**

- IEEE Transaction on Medical Imaging
- IEEE Transaction on Ultrasonics, Ferroelectrics, and Frequency Control
- IEEE Transaction on Biomedical Engineering
- IEEE Transactions on Fuzzy Systems

- IEEE Access
- Ultrasonics
- Medical Physics
- Biomedical Optics Express
- Optics Express
- Optics Letters
- Optics and Lasers in Engineering
- Optics and Laser Technology
- Computers in Biology and Medicine
- Diagnostics
- Sensors
- Healthcare Informatics Research
- IEEE Transactions on Geoscience and Remote Sensing
- International Journal of Remote Sensing
- Applied Physics Letter
- the British Machine Vision Conference (BMVC)

- **Editorships and Editorial Boards**

- Journal of the Korean Society for Nondestructive Testing (JKSNT), Editorial Board, 2020 ~ Current,
- Sensors, Guest Editor, 2020

B. Professional

- SPIE Photonics West BIOS, Program Committee, 2016 ~ current
- IEEE IUS Program Committee, 2022 ~ current
- BIOIMAGING conference, Program Committee, 2019 ~ current,
- 2017 International Congress on Ultrasonics, Session Chair, 2017
- IEEE Member
- SPIE Member
- OSA Member

- The Korea Society of Medical and Biological Engineering (KOSOMBE), Life Member/Concil Member
- The Acoustical Society of Korea Member
- The Korean Society for Nondestructive Testing Member

C. Campus

- Sensorium TFT Committee, DGIST, 2021
- Reorganization TFT Committee, DGIST, 2021
- SPACE Steering Committee DGIST, 2021
- Planning and Management Committee, DGIST, 2021
- Tuition review Committee, DGIST, 2021
- Information Disclosure Committee, DGIST, 2021
- Research Security Management Committee, DGIST, 2021
- Research Project Review Committee, DGIST, 2019, 2021
- Research Security Management Committee, DGIST, 2019, 2021
- Equipment Review Committee, DGIST, 2018~2019
- Grand Challenge Forum Committee, DGIST, 2017
- DGIF Committee, DGIST, 2015~2017, 2019
- Admissions officer, DGIST, 2014~2015
- Student Committee, DGIST Department of Information and Communication, 2014~2018
- ICE Colloquium Committee, DGIST Department of Information and Communication, 2015
- Planning Committee, DGIST Department of Information and Communication, 2019, 2021

D. Community and National

- Technical Advisor, Dabeeo, 2016, 2017, 2018, 2019
- Technical Advisor, Noson, 2016