

# Heung-No Lee, Ph.D.



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## Professor

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Last updated in August, 2025 (visit his home page for latest information)

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## Professional Interest

The candidate is seeking a professional opportunity for teaching, research and startup. Primary teaching interests include machine learning, communications, information theory, and signal processing. Research and startup interests include *machine learning, computational intelligence, networks and blockchains*.

## Education

- **Ph.D. in Electrical Eng., University of California, Los Angeles, Dec. 1999**
  - *Title of Dissertation: Adaptive Diversity Combining, Equalization and Sequence Decoding for Time-Varying Dispersive Channels*
  - Advisor: Gregory J. Pottie, Ph.D.
- **M.S. in Electrical Eng., University of California, Los Angeles, Dec. 1994**
- **B.S. in Electrical Eng., University of California, Los Angeles, June 1993**

## Professional Positions Held

- **Director of ITRC Blockchain Intelligence Convergence Research Center**  
2021.7 – 2029.6

- **Director of AI Research Institute, GIST, Korea**  
2021.1 – 2023.1
- **Advisory member of The Presidential Commission on Policy Planning**  
2020.9 – 2022.9
- **CEO of LiverVance Co., Ltd. GIST Professor Start-up Venture**  
2020.1 – Present
- **Blockchain Advisory Committee of Korea Post Information Center**  
2018.10 – 2019.12
- **Director of Blockchain Internet Economic Research Center, GIST, Korea,**  
2018.8 – Present
- **Chairman of Communications Society of The Institute of Electronics Engineers of Korea, 2017.1 – 2019.12**
- **JCCI Academic Vice President of the Korean Institute of Communication Sciences, 2017.1 – 2017.12**
- **Vice Chairman of The Institute of Electronics Engineers of Korea (Registered Director) , 2017.1 – 2018.12**
- **Future Science & Technology Holding Co., Ltd., Executive Director,**  
2016.9 – 2017.11
- **Research Director, GIST, Korea, 2016.9 – 2017.11**
- **Director of Research Policy Center, GIST, Korea, 2016.9 – 2017.05**
- **Director of Intelligent Sensors Research Center, GIST, Korea,**  
2015.12 – Present
- **Member of R & D Special Zone Committee of Future Creation Science Department, 2015.12 – 2017.12**
- **Executive Director, Academic, Planning Department of The Institute of Electronics Engineers of Korea, 2015, 2016**
- **Visiting Professor, Choonam National University Hospital, 2012 – 2016**
- **Professor, GIST, Korea School of Electrical Engineering and Computer Science, 2009.1 – Present**
- **Assistant Professor, the University of Pittsburgh, Pittsburgh, U.S.A. Electrical and Computer Eng. Department, 2002.1 – 2008.12**
- **Research Staff Member, HRL Laboratories, L.L.C., (Formerly Hughes Research Laboratories) Information Science Laboratory, 1999.12 – 2002.1**

## **Awards and Honors**

- **Awarded the Prime Minister's Commendation at the 55th Science Day (Sensor Intelligence and Machine Learning), Apr. 25th, 2022**

- GIST Education Innovation Award 2021
- Korean Society of Electronic Engineering Haedong scholarly Award 2019
- GIST Research Award 2016 (for Contribution to Industrialization)
- Top 11 Research Outcomes of GIST, 2016
- National Research Foundation, This Month Science/Engineer Award, January 2014
- Top 50 Achievements of National Research and Development, awarded by National Research Foundation of Korea, Oct. 15th, 2013
- Top 100 Achievements of National Research and Development, awarded by Korean Ministry of Science, ICT and Planning, August, 28th, 2013
- Best Poster Award at the 6th International Symposium for Aging, Gwangju, Korea, Oct. 20th, 2012
- National Research Laboratory of Korea, 2010, National Research Foundation.
- University of Pittsburgh Central Research Development Grant Awards: 2002, 2005
- Pittsburgh Digital Greenhouse Research Grant Award 2002
- Who's who in America, nominated in 2001 and 2005.
- Departmental Scholar awarded upon graduation of UCLA, 1993
- Graduated UCLA as an Honor Student (Cum Laude)
- Member of Tau Beta Phi honor society

### **International Journal Editorship/ Group Membership**

- Associate Editor for IEEE Transactions on Cybernetics, since 2022 - present
- Elected Member of IEEE Computational Imaging Special Interest Group, Jan. 2017 - Dec. 2019
- Area Editor for AEU--International Journal of Electronics and Communications. Areas include channel coding, information theory, signal processing, communications theories. January 2013 - 2016
- Lead Guest Editor for EURASIP Journal on Wireless Communications and Networking. Special Issue on Networking Coding for Wireless Networks, Other Guest Editors: Sae-Young Chung (KAIST), Christina Fragouli (EPFL), and Zhi-Hong Mao (University of Pittsburgh)

## **Professional Society Activities**

### **International Technical Program Committees**

- IEEE WCNC 2013, IEEE Globecom 2013 (Wireless Network), IEEE International Conference on Communications 2013 (Wireless Network)
- IEEE PIMRC 2012, 2013: Wireless Networks and Cross-Layer Tracks
- IEEE International Conference on Communications 2012: Wireless Network Symposium.
- IEEE International Conference on Communications 2012: Ad-hoc and Sensor Networking Symposium.
- IEEE Globecom 2009, Nov.30th-Dec. 4<sup>th</sup>, Honolulu, Hawaii, USA
- IEEE/CME International Conference on Complex Medical Engineering 2009: April 9-11 at Tempe, AZ, USA
- IEEE International Conference on Communications 2008: Communication Theory Symposium, Beijing, China.
- International Wireless Communications & Mobile Computing Conference, MIMO Systems Symposium, August 12-16, 2007, Turtle Bay Resort, Honolulu, Hawaii.
- IEEE International Conference on Communications 2007: Communication Theory Symposium, Scotland.
- IEEE International Conference on Communications 2005: Communication Theory Symposium, Seoul, Korea

### **IEEE Chapters**

- Gwangju Section Chair, Jan. 2013 – Feb. 2017
- Gwangju Section Secretary, Jan. 2010 – Dec. 2012
- Pittsburgh Chapter Chair for IEEE Signal Processing Society, June 2005 -- Dec. 2008.

### **IEEE Conference Session Chairs**

- IEEE Wireless Communications and Network Conference, Las Vegas, Nevada, USA
- IEEE International Conference on Communications 2005: Communication Theory Symposium

### **Panels for Competitive National Science Foundation Programs (U.S.A.)**

- SBIR/STTR: Wireless Sensor Networks, program director: Dr. Murali Nair, Date July 31<sup>st</sup>, 2007.
- CISE Networking Division, NeTS: Service Date: June 1-2, 2006, Program Director: Du David.
- CISE Networking Division, NeTS: NOSS-Panel, Service Date: April 20-21, 2006, Program director: Guru Parulkar.
- SBIR/STTR, program director: Dr. Murali Nair, date: August 26, 2005.
- CISE Networking Division, Service Date: May 9-10<sup>th</sup>, 2005. Program Director: Dr. Joseph Evans.
- SBIR, program director: Dr. Murali Nair, date: September 15, 2003.

## Publications

### Books/Book Chapters

- A. Kumar, B. Kuldeep, I. Sharma, G. K. Singh, Heung-No Lee, “Advances in Multirate Filterbanks: a research survey”, *Advances in Multirate Systems*, Springer.
- B. Kuldeep, A. Kumar, G. K. Singh, Heung-No Lee, “Design of Multi-channel Filterbank using Minor Component Analysis and Fractional derivative Constraints”, *Advances in Multirate Systems*, Springer.
- A. Vishawkarma, A. Kumar and Heung-No Lee, “Design of Non-uniform Linear-Phase Transmultiplexer System for Communication”, *Advances in Multirate Systems*, Springer.
- Soogil Woo, Seungchan Lee, Younghak Shin, Heung-No Lee, *Review of Applications for Wireless Brain-Computer Interface systems, Emerging Theory and Practice in Neuroprosthetics*, Chapter 8, IGI Global, Pennsylvania, U.S.A., 2014.
- Seungchan Lee, Younghak Shin, Soogil Woo, and Heung-No Lee, *A Review of Wireless Brain-Computer Interface systems, Brain-Computer Interface*, Chapter 11, InTech, June, 2013
- Jae-Gun Choi, Sang-Jun Park, and Heung-No Lee, *Intelligent Sensor Networks: Across Sensing, Signal Processing, and Machine Learning*, Chapter 15, Taylor & Francis LLC, CRC Press, 2012.
- Heung-No Lee, *Adaptive Wireless Transceivers*, Lambert Academic Publishing, ISBN 978-3-8383-1889-9, Saarbrücken, Germany, 2010.
- Heung-No Lee, *Adaptive Diversity Combining, Equalization, and Sequence Decoding*, Ph.D. Dissertation, UCLA, 1999.

### Refereed Journals

[+ Students, Postdoc++, \* Corr]

1. H. Choi, S. Kim, and H.-N. Lee, “Error-Correction Code Verifiable Computation Consensus,” *IEEE Transactions on Information Forensics and Security*, vol. 20, pp. 6678-6692, June 2025. DOI: [10.1109/TIFS.2025.3581028](https://doi.org/10.1109/TIFS.2025.3581028). ([Press Release](#) (KR))
2. D. S. Bhatti, J. Lee, C. Kim, Y. Choi, H. H. Yoon, and H.-N. Lee, “Deep learning-based single-shot computational spectrometer using multilayer thin films,” *Scientific Reports*, vol. 15, p. 21232, July 2025. DOI: [10.1038/s41598-025-06691-6](https://doi.org/10.1038/s41598-025-06691-6). ([Press Release](#) (KR)) ([YTN Science 사이다](#)), ([YTN News Today](#)), ([AI Times](#)).

3. Bhatti, D.S., Haroon, M.A., Choi, H. *et al.* Outage reduction in 5G uplink cooperative NOMA using PSO-optimized relay selection and successive interference cancelation. *J Wireless Com Network* 2025, 47 (2025).  
<https://doi.org/10.1186/s13638-025-02448-x>
4. Rahman S M Wahidur+, Ishmam Tashdeed, Manjit Kaur, and Heung-No Lee\*, "Enhancing Zero-Shot Crypto Sentiment with Fine-tuned Language Model and Prompt Engineering", *IEEE Access*, vol. 12, pp. 10146-10159, 2024.
5. Raina, R., Gondhi, N.K., Chaahat et al. and Heung-No Lee\*, "A Systematic Review on Acute Leukemia Detection Using Deep Learning Techniques" *Arch. Computat. Methods Eng.* 30, 251–270 2023.
6. D. Singh, M. Kaur, J. M. Alanazi, A. A. AlZubi and Heung-No Lee\*, "Efficient Evolving Deep Ensemble Medical Image Captioning Network," *IEEE Journal of Biomedical and Health Informatics*, vol. 27, no. 2, pp. 1016-1025, Feb. 2023.
7. Pal, Hardev Singh, et al. and Heung-No Lee\*, "An effective ECG signal compression algorithm with self controlled reconstruction quality." *Computer Methods in Biomechanics and Biomedical Engineering* 27.7, 849-859, 2024.
8. D. Srivastava, S. S. Singh, B. Rajitha, M. Verma, M. Kaur and Heung-No Lee\*, "Content-Based Image Retrieval: A Survey on Local and Global Features Selection, Extraction, Representation, and Evaluation Parameters," *IEEE Access*, vol. 11, pp. 95410-95431, 2023.
9. M. Kaur et al. and Heung-No Lee\*, "EGCrypto: A Low-Complexity Elliptic Galois Cryptography Model for Secure Data Transmission in IoT," *IEEE Access*, vol. 11, pp. 90739-90748, 2023.
10. Singhai, P., Kumar, A., Ateek, A. et al. and Heung-No Lee\*, "ECG Signal Compression Based on Optimization of Wavelet Parameters and Threshold Levels Using Evolutionary Techniques", *Circuits Syst. Signal Process* 42, 3509–3537, 2023.
11. Kaur, M., Singh, D., Jabarulla, M.Y. et al. and Heung-No Lee\*, "Computational deep air quality prediction techniques: a systematic review." *Artif. Intell. Rev.* 56 (Suppl 2), 2053–2098, 2023.
12. M. Kaur, D. Singh, V. Kumar and Heung-No Lee\*, "MLNet: Metaheuristics-Based Lightweight Deep Learning Network for Cervical Cancer Diagnosis," *IEEE Journal of Biomedical and Health Informatics*, vol. 27, no. 10, pp. 5004-5014, Oct. 2023.
13. J. Su, Z. Liao, Z. Sheng, A. X. Liu, D. Singh. and Heung-No Lee\*, "Human Activity Recognition Using Self-Powered Sensors Based on Multilayer Bidirectional Long Short-Term Memory Networks," *IEEE Sensors Journal*, vol. 23, no. 18, pp. 20633-20641, 15 Sept.15, 2023.

14. Singh, Shashank Sheshar, et al. and Heung-No Lee\*, "Social network analysis: a survey on measure, structure, language information analysis, privacy, and applications." *ACM Transactions on Asian and Low-Resource Language Information Processing* 22.5: 1-47, 2023.
15. Kaushik, Harshit, et al. and Heung-No Lee\*, "TomFusioNet: A tomato crop analysis framework for mobile applications using the multi-objective optimization based late fusion of deep models and background elimination." *Applied Soft Computing* 133: 109898, 2023.
16. M. Kaur, A. A. AlZubi, D. Singh, V. Kumar and Heung-No Lee\*, "Lightweight Biomedical Image Encryption Approach," *IEEE Access*, vol. 11, pp. 74048-74057, 2023.
17. Pal, Hardev Singh, et al. and Heung-No Lee\*, "Electrocardiogram signal compression using adaptive tunable-Q wavelet transform and modified dead-zone quantizer." *ISA transactions* 142: 335-346, 2023.
18. Jusung Kang+, Young-Sik Kim, and Heung-No Lee\*, "Radio Frequency Public Key Generator for Digital Application", *IEEE Access*, Vol. 11, Dec. 2023, doi: 10.1109/ACCESS.2023.3340305, (ITRC project), (Impact factor: 3.9, Category: Engineering, Electrical & Electronic, JCI Quartile: Q2, JCI Percentile: 69.12)
19. Heung-No Lee\*, Young-Sik Kim, Dilbag Singh, and Manjit Kaur, "Green Bitcoin: Global Sound Money," *The Journal of Digital Assets*, Vol.1, No. 1, pg. 33-47, October, 2022. (The Inaugural Issue of the Journal of Digital Assets, No Impact Factor)
20. Cheolsun Kim+, Pavel Ni+, Kang Ryeol Lee, and Heung-No Lee\*, "Mass production-enabled computational spectrometers based on multilayer thin films", *Scientific Reports*, (Impact Factor: 4.380, Category: Multidisciplinary Sciences, JCI Quartile: Q1: JCI Percentile: 85.55, Do-Yak project)
21. Kaur, S., Singh, S., Kaur, M. *et al.* and Heung-No Lee\*, "A Systematic Review of Computational Image Steganography Approaches", *Arch Computat Methods Eng* 29, 4775–4797, 2022.
22. Himthani, V., Dhaka, V.S., Kaur, M. *et al.* and Heung-No Lee\*, "Comparative performance assessment of deep learning based image steganography techniques", *Sci. Rep.* 12, 16895, 2022.
23. Pallavi, Joshi, S., Singh, D. *et al.* and Heung-No Lee\*, "Comprehensive Review of Orthogonal Regression and Its Applications in Different Domains", *Arch. Computat. Methods Eng.* 29, 4027–4047, 2022.
24. Raina, R., Gondhi, N.K., Chaahat et al. and Heung-No Lee\*, "A Systematic Review on Acute Leukemia Detection Using Deep Learning Techniques", *Arch. Computat. Methods Eng.* 30, 251–270, 2023.



25. Kumar, A., Kumar, A., Vishwakarma, A., and Heung-No Lee\*, "An improved segmentation technique for multilevel thresholding of crop image using cuckoo search algorithm based on recursive minimum cross entropy", *IET Signal Processing*, 16(6), 630-649, 2022.
26. H. Singh, S. Sharma, M. Khurana, M. Kaur and Heung-No Lee\*, "Binary Drone Squadron Optimization Approaches for Feature Selection," *IEEE Access*, vol. 10, pp. 87099-87114, 2022.
27. Kshirsagar, Pravin R., et al. and Heung-No Lee\*, "Perception exploration on robustness syndromes with pre-processing entities using machine learning algorithm." *Frontiers in Public Health* 10, 893989, 2022.
28. Kour, Kanwalpreet, Deepali Gupta, Kamali Gupta, Sapna Juneja, Manjit Kaur, Amal H. Alharbi, and Heung-No Lee\*. "Controlling Agronomic Variables of Saffron Crop Using IoT for Sustainable Agriculture" *Sustainability* 14, no. 9: 5607, 2022.
29. S. S. Kushwaha, S. Joshi, D. Singh, M. Kaur and Heung-No Lee\*, "Ethereum Smart Contract Analysis Tools: A Systematic Review," *IEEE Access*, vol. 10, pp. 57037-57062, 2022.
30. J. Piri et al. and Heung-No Lee\*, "Mining and Interpretation of Critical Aspects of Infant Health Status Using Multi-Objective Evolutionary Feature Selection Approaches," *IEEE Access*, vol. 10, pp. 32622-32638, 2022.
31. R. Subramanian, S. Taterh, D. Singh and Heung-No Lee\*, "Efficient Fine Tuned Trapezoidal Fuzzy-Based Model for Failure Mode Effect Analysis Risk Prioritization," *IEEE Access*, vol. 10, pp. 50037-50046, 2022.
32. Kshirsagar, Pravin R., Hariprasath Manoharan, S. Shitharth, Abdulrhman M. Alshareef, Dilbag Singh, and Heung-No Lee\*. "Probabilistic Framework Allocation on Underwater Vehicular Systems Using Hydrophone Sensor Networks" *Water* 14, no. 8: 1292, 2022.
33. D. Singh, M. Kaur, V. Kumar, M. Y. Jabarulla and Heung-No Lee\*, "Artificial Intelligence-Based Cyber-Physical System for Severity Classification of Chikungunya Disease," *IEEE Journal of Translational Engineering in Health and Medicine*, vol. 10, pp. 1-9, 2022.
34. Singh, Dilbag, Yavuz Selim Taspinar, Ramazan Kursun, Ilkay Cinar, Murat Koklu, Ilker Ali Ozkan, and Heung-No Lee\*. "Classification and Analysis of Pistachio Species with Pre-Trained Deep Learning Models" *Electronics* 11, no. 7: 981, 2022.
35. H. Singh, A. Kumar, L. K. Balyan and Heung-No Lee\*, "Spatial Entropy Quartiles-Based Texture-Aware Fractional-Order Unsharp Masking for Visibility Enhancement of Remotely Sensed Images," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 52, no. 4, pp. 2275-2288, April 2022

36. Malhotra, Priyanka, Sheifali Gupta, Deepika Koundal, Atef Zaguia, Manjit Kaur, and Heung-No Lee\*. "Deep Learning-Based Computer-Aided Pneumothorax Detection Using Chest X-ray Images" *Sensors* 22, no. 6: 2278, 2022.
37. D. Singh, M. Kaur, M. Y. Jabarulla, V. Kumar and Heung-No Lee\*, "Evolving Fusion-Based Visibility Restoration Model for Hazy Remote Sensing Images Using Dynamic Differential Evolution," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 60, pp. 1-14, 2022.
38. Mishra, Abhinav, Ganapathiraju Dharahas, Shilpa Gite, Ketan Kotecha, Deepika Koundal, Atef Zaguia, Manjit Kaur, and Heung-No Lee\*. "ECG Data Analysis with Denoising Approach and Customized CNNs" *Sensors* 22, no. 5: 1928, 2022.
39. Aggarwal, Apeksha, Akshat Srivastava, Ajay Agarwal, Nidhi Chahal, Dilbag Singh, Abeer Ali Alnuaim, Aseel Alhadlaq, and Heung-No Lee\*. "Two-Way Feature Extraction for Speech Emotion Recognition Using Deep Learning" *Sensors* 22, no. 6: 2378, 2022.
40. M. Indushree, Manjit Kaur, Manish Raj, Shashidhara R., and Heung-No Lee\*. "Cross Channel Scripting and Code Injection Attacks on Web and Cloud-Based Applications: A Comprehensive Review" *Sensors* 22, no. 5: 1959 2022.
41. Dixit, Mayank, et al. and Heung-No Lee\*. "6+: A Novel Approach for Building Extraction from a Medium Resolution Multi-Spectral Satellite" *Sustainability* 14, no. 3: 1615. 2022.
42. Bondada, Praveen, Debabrata Samanta, Manjit Kaur, and Heung-No Lee\*. "Data Security-Based Routing in MANETs Using Key Management Mechanism" *Applied Sciences* 12, no. 3: 1041, 2022.
43. S. S. Kushwaha, S. Joshi, D. Singh, M. Kaur and Heung-No Lee\*, "Systematic Review of Security Vulnerabilities in Ethereum Blockchain Smart Contract," *IEEE Access*, vol. 10, pp. 6605-6621, 2022.
44. Singh, Deabrata, Anil Kumar Biswal, Deabrata Samanta, Dilbag Singh, and Heung-No Lee\*. "Juice Jacking: Security Issues and Improvements in USB Technology" *Sustainability* 14, no. 2: 939, 2022.
45. A. Kumar et al., and Heung-No Lee\*, "Efficient Stochastic Model for Operational Availability Optimization of Cooling Tower Using Metaheuristic Algorithms," *IEEE Access*, vol. 10, pp. 24659-24677, 2022.
46. B. Mishra et al. and Heung-No Lee\* , "Privacy Protection Framework for Android," *IEEE Access*, vol. 10, pp. 7973-7988, 2022,
47. V. Himthani, V. S. Dhaka, M. Kaur, D. Singh and Heung-No Lee\*, "Systematic Survey on Visually Meaningful Image Encryption Techniques," *IEEE Access*, vol. 10, pp. 98360-98373, 2022.

48. G. D. Singh, M. Prateek, S. Kumar, M. Verma, D. Singh and Heung-No Lee\* "Hybrid Genetic Firefly Algorithm-Based Routing Protocol for VANETs," *IEEE Access*, vol. 10, pp. 9142-9151, 2022.
49. Jusung Kang+, Younghak Shin, Hyunku Lee, Jintae Park, and Heung-No Lee\*, "Radio Frequency Fingerprinting for Frequency Hopping Emitter Identification", *Applied Sciences*, 11(22), Nov. 2021, doi: 10.3390/app112210812 (LIG Nex1 project), (Impact factor: 2.679, Category: Engineering, Multidisciplinary, JCI Quartile: Q2, JCI Percentile: 67.94)
50. D. Singh, V. Kumar, M. Kaur, M. Y. Jabarulla and Heung-No Lee\*, "Screening of COVID-19 Suspected Subjects Using Multi-Crossover Genetic Algorithm Based Dense Convolutional Neural Network," in *IEEE Access*, vol. 9, pp. 142566-142580, 2021, doi: 10.1109/ACCESS.2021.3120717.
51. Hyoungsung Kim+, Jehyuk Jang+, Sangjun Park+, and Heung-No Lee\*, "Error-Correction Code Proof-of-Work on Ethereum", *IEEE Access*, Vol. 9, pp. 135942-135952, Sep 2021. doi: <https://doi.org/10.1109/ACCESS.2021.3113522> (Impact Factor: 3.367, IITP & Do-Yak project) Paper: (Open Access)
52. Jabarulla, Mohamed Yaseen, and Heung-No Lee\*. "A blockchain and artificial intelligence-based, patient-centric healthcare system for combating the COVID-19 pandemic: Opportunities and applications." *Healthcare*. Vol. 9. No. 8. Mdpi, 2021.
53. Haeung Choi+, Sangjun Park+ and Heung-No Lee\*, "Covert Anti-Jamming Communication Based on Gaussian Coded Modulation", *Applied Sciences*, 11(9), April 2021, doi: <https://doi.org/10.3390/app11093759> (EW33 project), (Impact factor: 2.679, Category: Engineering, Multidisciplinary, JCI Quartile: Q2, JCI Percentile: 67.94)
54. H. Singh, A. Kumar, L.K.Balyan and Heung No Lee\*, "Spatial Entropy Quartiles based Texture Aware Fractional-order Unsharp Masking for Visibility Enhancement of Remotely Sensed Images", *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, (Impact Factor: 9.309, Do-Yak project)
1. Nikhil Agrawal, Anil Kumar, B. Kuldeep, S. Lee, H. N. Lee\*, "Weighted Least Square Design Technique for Hilbert Transformer using Fractional Derivative", *Signal, Image and Video Processing (Springer)*, Accepted (Impact factor: 1.794, Do-Yak project)
55. Mohamed Yaseen Jabarulla+ and Heung-No Lee\*, "Blockchain-Based Distributed Patient-Centric Image Management System", *Applied Sciences*, 11(1), 196, Dec. 2020. doi: <https://doi.org/10.3390/app11010196>. (IF: 2.474, Do-Yak and IITP)
56. Jehyuk Jang+ and Heung-No Lee, "Profitable Double-Spending Attacks," *Applied Sciences*, 10, 8477, .Nov. 2020. doi: <https://doi.org/10.3390/app10238477>. (IF: 2.474, Do-Yak and IITP)

57. Pavel Ni+, Heung-No Lee\*, “High-Resolution Ultrasound Imaging Enabled by Random Interference and Joint Image Reconstruction”, *Sensors* 2020, 20(22), 6434 (impact Factor: 3.275, Do-Yak project)
58. Hyunjun Jung+, Heung-No Lee\*, “ECCPoW: Error-Correction Code Based Proof-of-Work for ASIC Resistance”, *Symmetry*, June. 2020, Vol.12(6), 988 (impact Factor: 2.143, Do-Yak project)
59. Pavel S. Ni+, and Heung-No Lee\*, “High-Resolution Ultrasound Imaging Using Random Interference“, *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (T-UFFC)*, March. 2020. (Impact Factor: 2.989, Do-Yak project)
60. Cheolsun Kim+, Dongju Park+, and Heung-No Lee\*, “Compressive sensing spectroscopy using a residual convolutional neural network”, *MDPI Sensors*, Vol. 20(3), Jan. 2020. (Impact Factor: 3.031, Do-Yak project)
61. Seungchan Lee+, Younghak Shin+, Anil Kumar, Kiseon Kim, and Heung-No Lee\*, “Two-Wired Active Spring-Loaded Dry Electrodes for EEG Measurements”, *MDPI Sensors*, Vol.19, No.20, Article 4572, Oct. 2019. (Impact Factor: 3.031, Do-Yak project, Brain research project)
62. H. Singh, A. Kumar, L.K. Baylan, and Heung-No Lee\*, “Optimally sectioned and successively reconstructed histogram sub-equalizaion based gamma correction for satellite image enhancement”, *Multimedia Tools and Applications*, Vol.2019, No.78, pp20431-20463, Jul.2019 (Impact Factor : 2.101, Doyak Project)
63. H. Singh, A. Kumar, L.K. Baylan, and Heung-No Lee\*, “Fractional Order Integration Based Fusion Model for Piecewise Gamma Correction along with Textural Improvement for Satellite Images,” *IEEE Access*, Accepted. (Impact Factor: 3.244, Doyak Project)
64. Kiwon Yang+, Jusung Kang+, Jehyuk Jang+ and Heung-No Lee\*, “Multimodal Sparse Representation-Based Classification Scheme for RF Fingerprinting,” *IEEE Communications Letters*, Vol.23, Issue 5, pp867-870, May 2019 (Impact Factor: 2.723, Doyak Project)
65. Anil Kumar, Seungchan Lee+ and Heung-No Lee\* , “A New Design Method for FIR Notch Filter using Fractional Derivative and Swarm Intelligence,”, *Sadhana*, 2019 (Impact Factor: 0.592, Doyak Project) .
66. Cheolsun Kim+. Woong-Bi Lee+, Soo Kyung Lee, Yong Tak Lee, and Heung-No Lee\*, “Fabrication of 2D thin-film filter-array for compressive sensing spectroscopy”, *Optics and Lasers in Engineering*, Vol. 115, pp. 53-58, Apr. 2019. (Impact Factor: 3.388 Doyak project)

67. Sangjun Park and Heung-No Lee\*, “Fast Mixed Integer Quadratic Programming for Sparse Signal Estimation,” IEEE Access, Accepted. (Impact Factor: 3.244, Doyak Project)
68. Iqbal Zafar, Heung-No Lee\*, Saeid Nooshabadi, ”Highly Reliable Decision-Making Using Reliability Factor Feedback for Factory Condition Monitoring via WSNs”, Wireless Communications and Mobile Computing, Vol. 2018, Oct. 2018. (Impact Factor:0.869, Doyak project)
69. Anil Kumar, N. Agrawal, I. Sharma, Seungchan Lee, and Heung-No Lee\*, “Hilbert Transform Design based on Fractional Derivatives and Swarm Optimization,” IEEE Trans. on Cybernetics, Early Access, 2018 (Impact Factor: 8.80, Doyak Project)
70. Seonggeon Kim, Uihyun Yun, Jehyuk Jang, Geunsu Seo, Jongjin Kang, Heung-No Lee, Minjae Lee \*, “Reduced Computational Complexity Orthogonal Matching Pursuit Using a Novel Partitioned Inversion Technique for Compressive Sensing,” Electronics, Vol.7, No.9, Sep. 2018 Impact Factor: 2.11)
71. Seungchan Lee+, Younghak Shin+, Anil Kumar, Minhee Kim, and Heung-No Lee\*, “Dry Electrode-based Fully Isolated EEG/fNIRS Hybrid Brain-monitoring System”, IEEE Trans. on Biomedical Engineering. Early Access. 2018. (Impact Factor: 4.28, Do-Yak project, Brain research project)
72. Mohamed Yaseen Jabarulla+ and Heung-No Lee, “Speckle Reduction on Ultrasound Liver Images Based on a Sparse Representation over a Learned Dictionary” Applied Sciences-MDPI. Vol. 8, no, 6, pp 903, May. 2018. (Impact Factor: 1.689, Do-Yak Project)
73. Jehyuk Jang+ Sanghun Im, and Heung-No Lee\*, “Intentional Aliasing Method to Improve Sub-Nyquist Sampling System”, IEEE Transactions on Signal Processing, Vol. 66 (No.12), pp. 3311-3326, Jun. 2018 (Impact Factor: 4.300, Hanwha project)
74. Mohamed Yaseen Jabarulla+ and Heung-No Lee\*, “Speckle Reduction on Ultrasound Liver Images Based on a Sparse Representation over a Learned Dictionary” Applied Sciences-MDPI, Vol. 8 (No.6), pp. 903, May. 2018 (Impact Factor: 1.679, Do-Yak Project)
75. Woong-Bi Lee+, and Heung-No Lee\*, “Depth-estimation-enabled compound eyes,” Optics Communications, Vol. 412, pp. 178-185, Apr. 2018 (Impact Factor: 1.588, Do-Yak Project)
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#### **Refereed International Conference/Workshop Presentations**

1. Seungmin Kim+, Gyeongdeok Maeng+ and Heung-No. Lee\*, "Smart Contract-Based Checkpoint for Initial PoW Network Security," 2023 Fourteenth International Conference on Ubiquitous and Future Networks (ICUFN), Paris, France, 2023, pp. 88-93.
2. Jioh Lee+, Cheolsun Kim+, Young-in Choi+, and Heung-No Lee, "Image reconstruction for the artificial compound eye based on deep learning", SPIE Photonics West 2023, San Francisco, USA, Jan 28 – Feb. 2, 2023. (Do-Yak Project)
3. Heung-No Lee\*, Jongbaek Park, W.H. Cheong, Byungtae Lee, Kibae Kim\*, "Challenges and Solutions to Reimagining the Regulations for Blockchain (2021)," ICIS 2021 Proceedings. 1.
4. Mohamed Yaseen.J+, Giljun Jung+ and Heung-No Lee\*. "Decentralized Framework for Medical Images Based on Blockchain and Inter Planetary File System", The 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society(EMBC 2019), Berlin, Germany, Jul. 23-27, 2019. (Do-Yak Project)
5. Cheolsun Kim+, Dongju Park, and Heung-No Lee\*, "Convolutional neural networks for the reconstruction of spectra in compressive sensing spectrometers", SPIE Photonics West 2019, San Francisco, USA, Feb. 2-9, 2019. (Do-Yak Project)
6. Seungchan Lee+, and Heung-No Lee\*, "Design of Portable Functional Near-Infrared Spectroscopy-based Brain Monitoring System", International Conference on Electronics, Information, and Communication (ICEIC) 2019, Auckland, New Zealand, Jan. 22-25, 2019. (Do-Yak Project)
7. Zafar Iqbal+, Saeid Nooshabadi, and Heung-No Lee\*, "Locating and Disregarding the Information from Compromised Sensors in a WSN", The 9th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (IEEE UEMCON 2018), New York, USA, Nov. 8-10, 2018.
8. Seungchan Lee+, Anil Kumar, and Heung-No Lee\*, "Development of a 16bit 8-channel functional near-infrared spectroscopy based neuroimaging system", The 40th Annual International Conference of the IEEE Engineering in Medicine and

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9. Hyunjun Han+, Jusung Kang+, Muhammad Asif Raza and Heung-No Lee\*, “Learning Through Adverse Event for Collision Avoidance: A Self-Learning Approach”, The 10th International Conference on Ubiquitous and Future Networks(ICUFN 2018), Prague, Czech Republic, Jul. 3-6, 2018. (UAVs projects)
  10. H. Singh, A. Kumar, L. K. Balyan, H. N. Lee\*, “Piecewise Gamma Corrected Optimally Framed Grumwald-Letnikov Fractional Differential Masking for Satellite Image Enhancement”, IEEE International Conference on Communication and Signal Processing(ICCSP), Melmaruvathur, Tamilnadu, India, Apr. 3-5, 2018. (No acknowledgment)
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  12. Mohamed Yaseen.J+ and Heung-No Lee\*.“Evaluating the Effect of Various Speckle Reduction Filters on Ultrasound Liver Cancer Images”, 17th Int. Conf. on Electron. Inf. and Commun. (ICEIC 2018), Hawaii, USA, Jan. 24-27, 2018. (Do-Yak Project)
  13. Seungchan Lee+, Anil Kumar, Younghak Shin+, and Heung-No Lee\*, “An improved design of EEG monitoring system with dry electrodes”, The 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society(EMBC 2017), Jeju Island, South Korea, July 11-15 2017, (Brain Research Program)
  14. Ni Pavel+, Heung-No Lee\*, “Ultrasound Image Reconstruction using Compressive Sensing” , The 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Jeju-do South Korea, July 11-15 2017, (Do-Yak) poster.
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26. Woong-Bi Lee<sup>+</sup>, Cheolsun Kim<sup>+</sup>, Gun Wu Ju<sup>+</sup>, Yong Tak Lee, and Heung-No Lee\*, "Design of thin-film filters for resolution improvements in filter-array based spectrometers using DSP", SPIE Defense + Commercial Sensing 2016, Baltimore, USA, Apr. 17-21, 2016.
27. Seungchan Lee<sup>+</sup>, Younghak Shin<sup>+</sup> and Heung-No Lee\*, "Design of Active Dry Electrodes and its Evaluation for EEG acquisition", International Conference on ICT Convergence 2015 (ICTC 2015), Jeju, Korea, Oct. 28-30, 2015.

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