


Hyeju Shin

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Education

Chonnam National University M.S. in Electronics and Computer Engineering (Advisor: Prof. Jinsul Kim) <ul style="list-style-type: none">Thesis: Improving the Performance of MPNN-based Network Evaluation Model for Digital Twin Network	Mar. 2022 – Feb. 2024 Gwangju, South Korea
Chonnam National University B.E. in Industrial Engineering B.E. in Computer & Information Engineering <ul style="list-style-type: none">Thesis: Development of a deep learning model for detecting illegal driving in shared mobility using YOLO (Advisor: Prof. Ji-Seung Nam) ( The Excellence Prize of Capstone Design Contest)	Mar. 2017 – Feb. 2022 Gwangju, South Korea

Research Experience

Electronics and Telecommunications Research Institute (ETRI) Researcher at Edge Computing Application Service Lab. (Director: Dr. Sung Chang Kim) <ul style="list-style-type: none">Proposing&Developing heterogeneous, Jetson orin nano and Jetson Xavier, Federated Learning with K8S	Sep. 2024 – Present Gwangju, South Korea
AISeed Researcher at Research Center <ul style="list-style-type: none">Established real-time OCR function of medical AI service using Opensource with PyTorch	Mar. 2024 – Sep. 2024 Gwangju, South Korea
Electronics and Telecommunications Research Institute (ETRI) Research Intern at Edge Computing Application Service Lab. (Director: Dr. Sung Chang Kim) <ul style="list-style-type: none">Performed pose-estimation inference acceleration on Jetson nano with Hailo-8 and ONNX framework.	Nov. 2023 – Feb. 2024 Gwangju, South Korea
Institut Polytechnique de Paris (IP Paris) Short-term Visiting Researcher at RMS research group (Advisor: Prof. Keun-Woo Lim) <ul style="list-style-type: none">Presented DTN techonology [PPT] with research discussion about on-device learning	Jul. 2023 – Jul. 2023 Palaiseau, France

Journal Articles

- [1] J. C. Shim, **H. Shin**, J. Kim, and H. Y. Ryu, "Analysis of digital twin network technology trends for autonomous networks," *Electronics and Telecommunications Trends*, Submitted, 2024.
- [2] **H. Shin**, S. Oh, A. Isah, I. Aliyu, J. Park, and J. Kim, "Network traffic prediction model in a data-driven digital twin network architecture," *Electronics*, vol. 12, no. 18, Sep. 2023, [[Paper](#)].
- [3] **H. Shin**, S. Oh, S. Oh, K. Kim, and J. Kim, "A study on the federated learning system architecture in hybrid cloud environment," *Korea Knowledge Information Technology Society (KKITS)*, vol. 18, no. 2, Apr. 2023, [[Paper](#)].
- [4] M. S. Miah and **H. Shin***, "E-scooter detection in media using deep learning," *The Journal of Contents Computing*, vol. 4, no. 1, pp. 393–399, Jun. 2022, [[Paper](#)].
- [5] A. Isah, **H. Shin**, S. Oh, *et al.*, "Digital twins temporal dependencies-based on time series using multivariate long short-term memory," *Electronics*, vol. 12, no. 19, Oct. 2023, [[Paper](#)].
- [6] S. Oh, S. Oh, **H. Shin**, T.-w. Um, and J. Kim, "Deep learning model performance and optimal model study for hourly fine power consumption prediction," *Electronics*, vol. 12, no. 16, Aug. 2023, [[Paper](#)].
- [7] S. Oh, **H. Shin**, and J. Kim, "A survey on microservices use cases for ai based application on hybrid cloud," *The Journal of Contents Computing*, vol. 4, no. 1, pp. 439–448, Jun. 2022, [[Paper](#)].
- [8] S. Oh, S. Oh, **H. Shin**, and J. Kim, "Pre-processing optimization for learning power consumption prediction models," *The Journal of Contents Computing*, vol. 4, no. 1, pp. 431–437, Jun. 2022, [[Paper](#)].
- [9] S. Oh, S. Oh, Y. Kim, **H. Shin**, and J. Kim, "Node pruning-based compact deep convolutional neural network model for object classification in images," *Journal of Digital Contents Society (JDCS)*, vol. 23, no. 4, pp. 735–742, Apr. 2022, [[Paper](#)].
- [10] S. Oh, S. Oh, **H. Shin**, and J. Kim, "A study on super resolution of srcnn according to early up-sampling method," *The Journal of Contents Computing*, vol. 3, no. 2, pp. 375–380, Dec. 2021, [[Paper](#)].

International Conference Proceedings

- [1] **H. Shin**, "Adaptive split federated learning for efficient training of advanced models on resource-constrained edge devices," In preparation.
- [2] **H. Shin**, I. Aliyu, A. Isah, and J. Kim, "Improving the real-data driven network evaluation model for digital twin networks," in *2024 IEEE International Conference on Communications Workshops (ICC Workshops)*, [Paper], [PPT], Denver, CO, USA, Jun. 2024.
- [3] **H. Shin**, S. Oh, J. Lee, G. Chung, and J. Kim, "Designing data pipeline for network data management in digital twin network environment," in *2024 International Conference on Artificial Intelligence in Information and Communication (ICAIIIC)*, [Paper], Osaka, Japan, Feb. 2024, pp. 750–753.
- [4] A. Isah, **H. Shin**, I. Aliyu, R. M. Sulaiman, and J. Kim, "Graph neural network for digital twin network: A conceptual framework," in *2024 International Conference on Artificial Intelligence in Information and Communication (ICAIIIC)*, [Paper], Osaka, Japan, Feb. 2024, pp. 1–5.
- [5] A. Isah, **H. Shin**, S. A. Hassan, S. Oh, and J. Kim, "Towards temporal dependency identification based on multivariate time series iiot data," in *2023 14th International Conference on Information and Communication Technology Convergence (ICTC)*, [Paper], Jeju Island, Korea, Republic of, Oct. 2023, pp. 368–371.
- [6] I. Aliyu, S. Oh, **H. Shin**, et al., "Toward a dynamic tasks offloading and resource allocation for the metaverse in in-network computing," in *2023 Fourteenth International Conference on Ubiquitous and Future Networks (ICUFN)*, [Paper], Paris, France, Jul. 2023, pp. 798–803.
- [7] A. Isah, **H. Shin**, I. Aliyu, et al., "A data-driven digital twin network architecture in the industrial internet of things (IIoT) applications," in *10th ICAEIC 2023*, [Paper], Jeju Island, Korea, Republic of, 2023.
- [8] S. Oh, **H. Shin**, M. Hahn, and J. Kim, "Analysis of resource usage management plan for federated learning in hybrid cloud," in *2023 International Conference on Artificial Intelligence in Information and Communication (ICAIIIC)*, [Paper], Bali, Indonesia, Feb. 2023, pp. 657–661.

Patents

- [1] J. Kim and **H. Shin**, *System, method and program for transacting power forecasting ai model based on blockchain*, KR Patent 10-2570617, [Google Patents], Aug. 2023.
- [2] J. Kim, D. Lee, A. Ashiquzzaman, Y. Kim, and **H. Shin**, *Method for predicting potential confirmator of epidemic through analysis of cctv video*, KR Patent 10-2265617, [Google Patents], Jun. 2021.

Undergraduate Capstone Project

Detecting Illegal Driving of Shared E-Scooter | Python, YOLOv3, labellmg, Roboflow [\[Wiki\]](#) [\[Dataset\]](#)

- Led project to develop system for detecting illegal shared e-scooter driving: no helmet or two people on a scooter.
- Collected and Labelled shared e-scooter image using *labellmg* and Augmented image using *Roboflow*.
- Developed real-time e-scooter company classifier using YOLOv3 pre-trained weights of COCO dataset.

Scholarships & Awards

BK21 Scholarship at BK21 Four IoT Research Center \$15,000	Mar. 2022 – Dec. 2023
TA Scholarship: Linux system and practices, IoT Computing at CNU \$3,400	Sep. 2021 – Jun. 2023
Research Incentive for Graduate Student at BK21 Four IoT Research Center \$144	Aug. 2022, Feb. 2023
The Excellence Paper Prize at Korea Digital Contents Society (Domestic Conference)	Nov. 2022
Tuition Scholarships at CNU \$13,693	Mar. 2017 – Feb. 2022
The Excellence Prize of Capstone Design Contest at Engineering Innovation Center \$72	Sep. 2021
The Third Prize of Public Data Utilization Contest at Gwangju Metropolitan City \$360	Jul. 2020

Service & Activities

Reviewer at Springer Nature	Jun. 2024 – Present
IEEE Puzzlers Puzzler Quest Level - Silver	Mar. 2024 – Present
IEEE Student Member	Jan. 2024 – Present