Hyeju Shin

hyeju99.github.io | Google scholar | ResearchGate | sinhye102@gmail.com

Education

Chonnam National University Mar. 2022 – Feb. 2024
M.S. in Electronics and Computer Engineering (Advisor: Prof. Jinsul Kim) *Gwangju, South Korea*
- **Thesis:** Improving the Performance of MPNN-based Network Evaluation Model for Digital Twin Network

Chonnam National University Mar. 2017 – Feb. 2022
B.E. in Industrial Engineering *Gwangju, South Korea*
B.E. in Computer & Information Engineering
- **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)*

Research Experience

Electronics and Telecommunications Research Institute (ETRI) Sep. 2024 – Present
Researcher at Edge Computing Application Service Lab. (Director: Dr. Sung Chang Kim) *Gwangju, South Korea*
- Proposing&Developing heterogeneous, Jetson orin nano and Jetson Xavier, Federated Learning with K8S

AISeed Mar. 2024 – Sep. 2024
Researcher at Research Center *Gwangju, South Korea*
- Established real-time OCR function of medical AI service using Opensource with PyTorch

Electronics and Telecommunications Research Institute (ETRI) Nov. 2023 – Feb. 2024
Research Intern at Edge Computing Application Service Lab. (Director: Dr. Sung Chang Kim) *Gwangju, South Korea*
- Performed pose-estimation inference acceleration on Jetson nano with Hailo-8 and ONNX framework.

Institut Polytechnique de Paris (IP Paris) Jul. 2023 – Jul. 2023
Short-term Visiting Researcher at RMS research group (Advisor: Prof. Keun-Woo Lim) *Palaiseau, France*
- Presented DTN techonology [PPT] with research discussion about on-device learning

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**, 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.

[2] **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 (ICAIIC)*, [Paper], Osaka, Japan, Feb. 2024, pp. 750–753.

[3] 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 (ICAIIC)*, [Paper], Osaka, Japan, Feb. 2024, pp. 1–5.

[4] 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.

[5] 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.

[6] 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.

[7] 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 (ICAIIC)*, [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*, *labelImg*, *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 *labelImg* 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*