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CONTACT INFORMATION

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RESEARCH INTERESTS

Artificial General Intelligence: Unsupervised Domain Adaptation, Incremental Learning, Continual Learning, Lifelong Language Learning, Transfer Learning, Few-Shot Learning, Anomaly Detection, Multi-Modal AI, Image Manipulation, GAN Inversion, and Advanced Generative Models.

EDUCATION

KAIST, Daejeon, Republic of Korea 03/2016 – 08/2019
Ph.D. in School of Electrical Engineering
Thesis: "Memory-based Continual Learning for Autonomous Intelligent Agent"
Advisor: Prof. Jong-Hwan Kim

KAIST, Daejeon, Republic of Korea 03/2014 – 02/2016
M.S. in School of Electrical Engineering
Thesis: "Deep ART Memory Based Cognitive Architecture for Robots"
Advisor: Prof. Jong-Hwan Kim

Sungkyunkwan University, Suwon, Republic of Korea 03/2008 – 02/2014
B.S. in Electronic and Electrical Engineering
Thesis: "The Enhancement of Light Extraction Efficiency of Blue-LED by Using Double Layer Photonic Crystals"
Advisor: Prof. Bong-Shik Song

POSITIONS

Kyung Hee University, Suwon, Republic of Korea 03/2021 – Present
Assistant Professor, Computer Science and Engineering

ETRI, Daejeon, Republic of Korea 03/2020 – 02/2021
Researcher, Artificial Information Research Laboratory

KAIST, Daejeon, Republic of Korea 09/2019 – 02/2020
Postdoctoral Fellow, Information & Electronics Research Institute

TEACHING EXPERIENCE

Professor at Computer Science and Engineering, KHU 2021 – Present

- CSE203: "Computer Architecture" (3-credits)
- CSE406: "Capstone Design1" (3-credits)
- CSE405: "Capstone Design2" (3-credits)
- CSE7521: "Advanced Probability and Statistics" (3-credits)
- AI7005: "Advanced Deep Learning" (3-credits)

Teaching assistant at School of Electrical Engineering, KAIST 2014 – 2016

- EE212: "Electronics Design and Practice" (3-credits)
- EE381: "Control System Engineering" (3-credits)
- EE490: "B.S. Thesis Research" (3-credits)
- EE495: "Individual Study" (3-credits)

RESEARCH PROJECTS

[1] Video and Audio-Driven Lip Sync Generation Models 2022 – 2025
Supervision: ETRI
Role: Principal Investigator

[2] Artificial Intelligence Convergence Innovation Human Resources Development (Kyung Hee University) 2022 – 2025
for Effective Early Diagnosis of Arrhythmia
Supervision: Institute of Information & Communications Technology Planning & Evaluation (IITP)
Role: Principal Investigator

[3] Research Proposal in the Field of Artificial General Intelligence for ETRI Open Research Promotion 2022
Supervision: ETRI
Role: Principal Investigator

[4] Artificial Intelligence Innovation Hub 2021 – 2025
Supervision: Institute of Information & Communications Technology Planning & Evaluation (IITP)
Role: Participating Researcher

[5] Patient-specific General Intelligence 2021 – 2024
for Effective Early Diagnosis of Arrhythmia
Supervision: Institute of Information & Communications Technology Planning & Evaluation (IITP)
Role: Principal Investigator

[6] Development of Robot Hand Manipulation Intelligence 2018 – 2020
to Learn Methods and Procedures for Handling Various Objects
with Tactile Robot Hands
Supervision: National IT Industry Promotion Agency (NIPA)
Role: Sub-team leader (2018-2019) & Development of knowledge transfer learning technology for Deep RL, applicable to other task environments and objects of new domain

[7] Research on Adaptive Machine Learning Technology 2016 – 2020
Development for Intelligent Autonomous Digital Companion
Supervision: Institute of Information & Communications Technology Planning & Evaluation (IITP)
Role: Sub-team leader (2016-2019) & Memory-based developmental learning and continual learning for deep neural networks

[8] Long-Term Memory Module based intelligent Operating 2015 – 2020
Architecture Design Technology for Implementing Artificial Intelligence
Supervision: Samsung Device Solutions (DS)
Role: Project leader (2016-2018) & Design of long-term memory module for intelligent Operating Architecture (iOA)

[9] Development of Robot Task Intelligence Technology 2014 – 2018
that can Perform Task more than 80% in Inexperience Situation through Autonomous Knowledge Acquisition and Knowledge Application
Supervision: Korea Evaluation Institute of Industrial Technology (KEIT)
Role: Project leader (2017-2018) & Design of long-term memory which can do adaptive knowledge acquisition for task intelligence of the robot & General Manager of real robot experiments

[10] Development of Container Carrier Shape Measurement System 2014
Supervision: Hyundai Heavy Industry (HHI)
Role: Researcher (2014) & Design of the motor control board and product test

[11] Robust Unified Navigation Technology of Humanoid Robot 2014
Using Gaze Control, Posture Learning and Footstep Planning

Supervision: National Research Foundation of Korea (NRF)
Role: Sub-team leader (2014) & Development of the kid-sized humanoid robot (HanSaRam) & Design of the robust posture controller

JOURNAL PAPERS

[1] J.-W. Choi, **G.-M. Park**, and J.-H. Kim
"SR-EM: Episodic Memory Aware of Semantic Relations Based on Hierarchical Clustering Resonance Network"
IEEE Transactions on Cybernetics (TCYB), vol. 32, no. 10, pp. 10339-10351, Oct. 2022.

[2] **G.-M. Park** and J.-H. Kim
"Adaptive Developmental Resonance Network"
IEEE Transactions on Neural Networks and Learning Systems (TNNLS), vol. 32, no. 10, pp. 4347-4361, Oct. 2021.

[3] **G.-M. Park**, S.-M. Yoo, and J.-H. Kim
"Convolutional Neural Network with Developmental Memory for Continual Learning"
IEEE Transactions on Neural Networks and Learning Systems (TNNLS), vol. 32, no. 6, pp. 2691-2705, Jun. 2021.

[4] **G.-M. Park**, J.-W. Choi, and J.-H. Kim
"Developmental Resonance Network"
IEEE Transactions on Neural Networks and Learning Systems (TNNLS), vol. 30, no. 40, pp. 1278-1284, Apr. 2019.

[5] **G.-M. Park**, Y.-H. Yoo, D.-H. Kim, and J.-H. Kim
"Deep ART Neural Model for Biologically Inspired Episodic Memory and Its Application to Task Performance of Robots,"
IEEE Transactions on Cybernetics (TCYB), vol. 48, no. 6, pp. 1786-1799, Jun. 2018.

[6] D.-H. Kim, **G.-M. Park**, Y.-H. Yoo, I.-B. Jeong, and J.-H. Kim
"Realization of Task Intelligence for Service Robots in an Unstructured Environment"
Annual Reviews in Control, vol. 44, no. 1, pp. 9-18, Sep. 2017.

[7] I.-B. Jeong, W.-R. Ko, **G.-M. Park**, D.-H. Kim, Y.-H. Yoo, and J.-H. Kim
"Task Intelligence of Robots: Neural Model-based Mechanism of Thought and Online Motion Planning"
IEEE Trans. Emerg. Topics Comput. Intell. (TETCI), vol. 1, no. 1, pp. 41-50, Feb. 2017.

CONFERENCE PAPERS

[1] Seung-Joon Moon and **G.-M. Park**
"IntereStyle: Encoding an Interest Region for Robust StyleGAN Inversion"
European Conference on Computer Vision (ECCV), Tel-Aviv, Israel, Oct. 2022.

[2] Joonhyuk Kim, Inug Yoon, **G.-M. Park**, and J.-H. Kim
"Non-Probabilistic Cosine Similarity Loss for Few-Show Image Classification"
The British Machine Vision Conference (BMVC), Manchester, England, Sep. 2020.

[3] Joonhyuk Kim, **G.-M. Park**, and J.-H. Kim
"A Two-phase Multi-channel Classification Resonance Network"
International Conference on Robot Intelligence Technology and Applications (RiTA), Daejeon, Korea, Nov. 2019.

[4] Dick Sigmund, **G.-M. Park**, and J.-H. Kim
"Context Preference-based Deep Adaptive Resonance Theory: Integrating User Preference into Episodic Memory Encoding and Retrieval"
IEEE International Joint Conference on Neural Networks (IJCNN), Alaska, USA, May. 2017.

[5] Y.-H. Yoo, D.-H. Kim, **G.-M. Park**, I.-B. Jeong, S.-H. Baek, S.-J. Ryu, and J.-H. Kim
"Memory-based Realization of Task Intelligence for Robots in Human Environment"
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Workshop, Daejeon, Korea, Oct. 2016.

[6] **G.-M. Park**, Sanghyun Cho, and J.-H. Kim
"Biologically-Inspired Episodic Memory Model Considering the Context Information"
IEEE Conference on System, Man, and Cybernetics (SMC), Hungary, Budapest, Oct. 2016.

[7] **G.-M. Park** and J.-H. Kim
"Deep Adaptive Resonance Theory for Learning Biologically Inspired Episodic Memory"
IEEE International Joint Conference on Neural Networks (IJCNN), Vancouver, Canada, Jul. 2016.

[8] **G.-M. Park**, Y.-H. Yoo, and J.-H. Kim
"REM-ART: Reward-based Electromagnetic Adaptive Resonance Theory"
International Conference on Artificial Intelligence (ICAI), Las Vegas, U.S.A., Jul. 2015.

[9] **G.-M. Park**, S.-H. Baek, and J.-H. Kim
"Falling Prevention System from External Disturbances for Humanoid Robots"
International Conference on Robot Intelligence Technology and Applications (RiTA), Beijing, China, Nov. 2014.

PATENTS

[1] H.-W. Kim, **G.-M. Park**, J.-G. Park, H.-J. Song, E.-S. Chung, and R. Han
"Method and Apparatus for Online Bayesian Few-shot Learning"
US/Korean Patent Registration (US2021039800A1), Dec. 2021.

[2] Ahyung Shin and **G.-M. Park**
"Method for Detecting Anomaly in Time Series Data and Computing Device for Executing the Method"
US/Korean Patent Application (10-2021-0175107), Dec. 2021.

[3] E.-S. Chung, H.-W. Kim, **G.-M. Park**, J.-G. Park, H.-J. Song, B.-H. Yoo, and R. Han
"System and Method for Adaptive Masking and Non-Directional Language Understanding and Generation"
Korean Patent Application (10-2020-0168645), Dec. 4, 2020.

[4] **G.-M. Park**, H.-W. Kim, J.-G. Park, H.-J. Song, B.-H. Yoo, E.-S. Chung, and R. Han
"Device and Method for Learning Natural Language Processing Comprising External Memory Network"
Korean Patent Application (10-2020-0141061), Oct. 28, 2020.

[5] H.-J. Song, H.-W. Kim, **G.-M. Park**, B.-H. Yoo, E.-S. Chung, and R. Han
"Method and Apparatus for Multi-level Verification Learning"
Korean Patent Application (10-2020-0104620), Aug. 20, 2020.

[6] B.-S. Song, G.-B. Park, and **G.-M. Park**
"A Light Emitting Diode Containing a Double-Layered Photonic Crystal Structure"
Korean Patent Registration (10-1529817), Jun. 2015.

ACADEMIC SERVICES

Journal Reviewer 2016 – Present

- IEEE Trans. on Industrial Electronics (TIE)
- IEEE Trans. on Cybernetics (TCYB)
- IEEE Robotics and Automation Letters (RA-L)
- IEEE Access

Conference Reviewer 2020 – Present

- IEEE / CVF Computer Vision and Pattern Recognition (CVPR)
- European Conference on Computer Vision (ECCV)
- Empirical Methods in Natural Language Processing (EMNLP)
- Int. Conf. on Robotics and Automation (ICRA)

HONORS & AWARDS

Excellence Award, KAIST 2018

2018 Research Performance Evaluation System for Doctoral Student

SKILLS

Languages

Korean (native)

English

Programming Skills

C, C++, Python (PyTorch, TensorFlow), MATLAB

ROS, Webots, OrCAD, (PCB Solutions), Solidworks, Solid Edge (CAD)