

# Gyeong-Moon Park

Postdoctoral Fellow in Information & Electronics Research Institute  
Robot Intelligence Technology Laboratory  
Korea Advanced Institute of Science and Technology (KAIST)  
<https://gyeongmoon.github.io>

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CONTACT INFORMATION	Room #3238, E3-2 Building, School of Electrical Engineering Korea Advanced Institute of Science and Technology (KAIST) 291 Daehak-ro, Yuseong-gu, Daejeon, 34141, Republic of Korea <b>Mobile:</b> +82 10-8226-0779 <b>Email:</b> <a href="mailto:gmpark@rit.kaist.ac.kr">gmpark@rit.kaist.ac.kr</a> <b>Homepage:</b> <a href="https://gyeongmoon.github.io">https://gyeongmoon.github.io</a>																								
RESEARCH INTERESTS	<b>Machine Learning:</b> Long-Term Memory, Unsupervised Learning (Clustering), Incremental Learning, Continual Learning, Transfer Learning, Computer Vision, Deep Reinforcement Learning  <b>Robotics:</b> Autonomous Intelligent Agent, Humanoid and its Gait Mechanism, Task Intelligence, Robot Hand Grasping																								
EDUCATION	<table><tr><td><b>KAIST</b>, Daejeon, Republic of Korea</td><td>03/2016 – 08/2019</td></tr><tr><td colspan="2">Ph.D. in School of Electrical Engineering</td></tr><tr><td colspan="2">Thesis: “Memory-based Continual Learning for Autonomous Intelligent Agent”</td></tr><tr><td colspan="2">Advisor: Prof. Jong-Hwan Kim</td></tr><tr><td><b>KAIST</b>, Daejeon, Republic of Korea</td><td>03/2014 – 02/2016</td></tr><tr><td colspan="2">M.S. in School of Electrical Engineering</td></tr><tr><td colspan="2">Thesis: “Deep ART Memory Based Cognitive Architecture for Robots”</td></tr><tr><td colspan="2">Advisor: Prof. Jong-Hwan Kim</td></tr><tr><td><b>Sungkyunkwan University</b>, Suwon, Republic of Korea</td><td>03/2008 – 02/2014</td></tr><tr><td colspan="2">B.S. in Electronic and Electrical Engineering</td></tr><tr><td colspan="2">Thesis: “The Enhancement of Light Extraction Efficiency of Blue-LED by Using Double Layer Photonic Crystals”</td></tr><tr><td colspan="2">Advisor: Prof. Bong-Shik Song</td></tr></table>	<b>KAIST</b> , 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		<b>KAIST</b> , 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		<b>Sungkyunkwan University</b> , 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	
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POSITIONS	<b>KAIST</b> , Daejeon, Republic of Korea Postdoctoral Fellow, Information & Electronics Research Institute	09/2019 – Present
TEACHING EXPERIENCE	<b>Teaching assistant</b> at School of Electrical Engineering, KAIST <ul style="list-style-type: none"> <li>• EE212: “Electronics Design and Practice” (3-credits)</li> <li>• EE381: “Control System Engineering” (3-credits)</li> <li>• EE490: “B.S. Thesis Research” (3-credits)</li> <li>• EE495: “Individual Study” (3-credits)</li> </ul>	2014 – 2016
RESEARCH PROJECTS	<p>[1] Development of Robot Hand Manipulation Intelligence to Learn Methods and Procedures for Handling Various Objects with Tactile Robot Hands  <b>Supervision:</b> National IT Industry Promotion Agency (NIPA)  <b>Role:</b> Sub-team leader (2018-2019) &amp; Development of knowledge transfer learning technology for Deep RL, applicable to other task environments and objects of new domain</p> <p>[2] Research on Adaptive Machine Learning Technology Development for Intelligent Autonomous Digital Companion  <b>Supervision:</b> Institute of Information &amp; Communications Technology Planning &amp; Evaluation (IITP)  <b>Role:</b> Sub-team leader (2016-2019) &amp; Memory-based developmental learning and continual learning for deep neural networks</p> <p>[3] Long-Term Memory Module based intelligent Operating Architecture Design Technology for Implementing Artificial Intelligence  <b>Supervision:</b> Samsung Device Solutions (DS)  <b>Role:</b> Project leader (2016-2018) &amp; Design of long-term memory module for intelligent Operating Architecture (iOA)</p> <p>[4] Development of Robot Task Intelligence Technology that can Perform Task more than 80% in Inexperience Situation through Autonomous Knowledge Acquisition and Knowledge Application  <b>Supervision:</b> Korea Evaluation Institute of Industrial Technology (KEIT)  <b>Role:</b> Project leader (2017-2018) &amp; Design of long-term memory which can do adaptive knowledge acquisition for task intelligence of the robot &amp; General Manager of real robot experiments</p> <p>[5] Development of Container Carrier Shape Measurement System</p>	<p>2018 – 2019</p> <p>2016 – 2019</p> <p>2015 – 2019</p> <p>2014 – 2018</p> <p>2014</p>

- [6] 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] **G.-M. Park** and J.-H. Kim  
“Adaptive Developmental Resonance Network”  
*IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*,  
Jul. 2019, under review. [SCI, IF 11.683]
- [2] **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)*,  
May 2019, under review. [SCI, IF 11.683]
- [3] **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. [SCI, IF 11.683]
- [4] **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. [SCI, IF 10.387]
- [5] 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 (IFAC)*, vol. 44, no. 1, pp. 9-18, Sep. 2017.  
[SCI-E, IF 4.759]
- [6] 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] 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.

- [2] 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.
- [3] 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.
- [4] **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.
- [5] **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.
- [6] **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.
- [7] **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.

ACADEMIC  
SERVICES

**Journal Reviewer**

2016 – 2019

- IEEE Trans. on Industrial Electronics (IEEE TIE)
- IEEE Trans. on Cybernetics (TCYB)

HONORS & AWARDS	<b>Excellence Award, KAIST</b> 2018 Research Performance Evaluation System for Doctoral Student	2018
PATENTS	<b>Korean Patent Registration (10-1529817)</b> A light emitting diode containing a double-layered photonic crystal structure	06/2015
SKILLS	<b>Languages</b> Korean (native) English  <b>Programming Skills</b> C, C++, Python (PyTorch, TensorFlow), MATLAB ROS, Webots, OrCAD, (PCB Solutions), Solidworks, Solid Edge (CAD)	
EXTRA ACTIVITIES	[Workshop] Developing Robots for Social Acceptance (DRSA) <b>Role:</b> Research presentations & Discussion of the research collaboration between KAIST and Aalborg Univ. in Denmark	11/2019
	[Reviewer] KAIST IP-CEO Program <b>Role:</b> Advisor & Reviewer to the presentations of explainable AI and cooperating robots.	07/2019
	[Presenter] Pangyo Future Forum “4 <sup>th</sup> Industrial Revolution and AI Korea” <b>Role:</b> Presenter in the poster session (topic: Convolutional Neural Network with Developmental Memory)	02/2019
	[Consultant] The Busan National Science Museum <b>Role:</b> Advisory committee & Comments to the inquiries about the installation of the intelligent receptionist robots in the BNSM lobby	04/2018
	[Media] EBS Docuprime “Educational Huge Revolution in the era of 4 <sup>th</sup> Industrial Revolution” <b>Role:</b> Interview as the KAIST robotics engineer & Demonstration of robot experiment Site: <a href="http://home.ebs.co.kr/docuprime/newReleaseView/345?c.page=1">http://home.ebs.co.kr/docuprime/newReleaseView/345?c.page=1</a>	09/2017
	<b>Student Representative</b> Robot Intelligence Technology Laboratory in KAIST	2017