

GILHYUN RYOU

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INTERESTS	Motion Planning & Manipulation, Robotic perception, Machine Learning, and Human Robot Interaction	
EDUCATION	Seoul National University <i>Bachelor of Science in Electrical and Computer Engineering</i> GPA (Overall : 4.03 /4.30, Major : 4.13 /4.30)	Mar 2012 - Feb 2018 Seoul, Korea
	Seoul Science High School <i>The School For Gifted Students</i>	Mar 2009 - Feb 2012 Seoul, Korea
HONORS AND AWARDS	Doctoral Study Abroad Scholarship , Korea Foundation for Advanced Studies, 2018-2023 <i>Scholarship covering full tuition and partial stipend (up to \$20,000/year) for doctoral study</i>	
	Presidential Science Scholarship , Korea Student Aid Foundation, 2012-2017 <i>Full tuition and partial stipend (\$5,000/year) for academic excellence</i>	
	Grand Prize in the 19th Korea Intelligent Robot Competition , 2017 <i>Ministerial Award with \$10,000, Korean Ministry of Trade, Industry, and Energy</i>	
	NAVER LABS Robotics Young Talent Support Scholarship , \$1,000, 2017	
	Gold Medal in the 31th University Students Mathematics Contest , 2012	
	Bronze Medal in the 5th International Olympiad in Astronomy and Astrophysics (IOAA) , 2011 Silver Medal in the 12th Korean Physics Olympiad , 2009	
PUBLICATIONS	G. Ryou , Y. Sim, S. H. Yeon, and S. Seok, "Applying Asynchronous Deep Classification Network and Gaming Reinforcement Learning-Based Motion Planner to a Mobile Robot", <i>The International Conference on Robotics and Automation (ICRA)</i> , Brisbane, Australia, May 2018 <i>Video Demo https://youtu.be/Nu6D0RBWek8</i>	
	G. Ryou , S. H. Yeon, D. Kim, and Y. Sim, "System Design for Autonomous Table Tennis Ball Collecting Robot", <i>International Conference on Control, Automation and Systems (ICCAS)</i> , Jeju, Korea, Oct 2017 <i>Video Demo https://youtu.be/fncadmZEqCk</i>	
	S. H. Jang, G. Ryou , M. Jung, H. Shim, H. Ko, D. Cho, "Motion control and Localization of biomimetic robot DASH using IMU sensor", <i>The 12th Korea Robotics Society Annual Conference (KRoC)</i> , Gangwon, Korea, Feb 2017	
	K. E. Park, E. J. Lee, G. H. Ryou , J. H. Choi, Y. J. Ko, S. Y. Lee, J. Kwon, "Smart Phone Application on Safety Education for Children with Disabilities", <i>HCI Korea</i> , Feb 2014	
PATENTS	KR10-2017-0100436 , "PICK UP ROBOT", Korea, Patent Pending - <i>System design of an autonomous ball collecting robot</i>	
	KR10-2017-0100437 , "METHOD OF CONTROLLING PICKUP ROBOT", Korea, Patent Pending - <i>Motion planning algorithm for a vision feedback-based mobile robot</i>	
	KR10-2017-0133482 , "PIPE ASSEMBLY", Korea, Patent Pending - <i>A multi-functioning hardware and control of variable inner geometry for a tendon driven snake-like robot</i>	
	KR10-2017-0133555 , "CONTROLLING MOBILE ROBOT BASED ON REINFORCEMENT LEARNING USING GAME ENVIRONMENT ABSTRACTION", Korea, Patent Pending	
	KR10-2017-0133570 , "CONTROLLING MOBILE ROBOT BASED ON ASYNCHRONOUS TARGET CLASSIFICATION", Korea, Patent Pending	

RESEARCH
EXPERIENCE

Robotics Laboratory, Seoul National University
Research Assistant Intern

Sep 2017 - Apr 2018

- Main Advisor : Professor Frank Chongwoo Park
- Participating in the startup project, "Automatic defect detection on factory line", at SNURobotics Team
- Developing semi-supervised or unsupervised anomaly detection algorithms to utilize deep learning within the limited data set

Nano/Micro Systems & Controls Laboratory, Seoul National University
Undergraduate Research Project

Jan 2015 - Jul 2016

- Main Advisor : Professor Dong-il "Dan" Cho
- Developed low cost, light weighted embedded control system for biomimetic robot DASH
- Implemented PID control system and Kalman Filter-based localization algorithm on micro-controller (Atmel AVR board), and optimized the algorithms to be operated in real time

WORK
EXPERIENCE

NAVER LABS Robotics Group
S/W Research Intern

Feb 2017 - Sep 2017

- Main Advisor : Dr. Sangok Seok (Meshworm and MIT Cheetah)
- Participated in Team Project : 'Autonomous mobile robot system for indoor object collection'
- Devised novel methodologies (ADCN & GRL-planner) to integrate Deep Learning into the mobile robots
- Filed 5 patents and wrote 2 papers (**ICCAS 2017**, **ICRA 2018**) as the first and corresponding author
- Developed robot TTbot was introduced in [Devview 2017](#) (Naver Developer Conference), SNUxTED Salon, and Korean presses including [Seoul Economic Network](#), [Korea UNN](#)
- Awarded Grand Prize, Korea Intelligent Robot Competition, \$ 10,000
- Awarded NAVER LABS Robotics Young Talent Support Scholarship, \$1,000
- *2017 International Conference on Control, Automation and Systems (ICCAS)*
- *Capstone Design*, senior undergraduate course of KAIST, was formulated based on the executed research

Samsung SDS

Aug 2011 - Aug 2013

Samsung SDS sGen club, Software Internship Program

- Developed the flying-ticket-accommodation service Playwings currently in use by two million users
- Implemented the Android native application to control Bluetooth signal strength for the distance estimation on laptop security service

EXTRA
CURRICULAR
ACTIVITIES

SNU Media Arts club Cre8s
Member

Feb 2016 - Oct 2016

- Supervised and led numerous ambitious media artists to develop software basis for the public exhibition
- Taught designers and artists basic ideation skills including Python, Linux Programming, and the usage of prototyping platform (Arduino & Raspberry PI)

Republic of Korea Air Force

Feb 2014 - Jan 2015

Aviation Operations Squadron, R.O.K. 15th Special Activity Wing

- Managed and operated military weather equipment in Weather Squadron

Yellow Circle

Aug 2013 - Jan 2014

School of Early Child and Special Education, Seoul National University of Education

- Organized the team with designers and special education teachers to develop educational resources for children with intellectual disability
- Developed preventative safety educational resources as a complement to existing Alternative Augmentative Communication (AAC) tools which have limited performance on emergency or injured situation
- Introduced interactive UI based on children's life scope and developed educational resources in form of mobile game to induce continuous interest of children

INVITED TALKS

TEDxSNU Salon

Sep 2017

"People who Make Something"

- Talk Title : "Artificial Intelligence in Mobile Robot"
- Presented the stories of utilizing deep-learning algorithms on the autonomous mobile robot, 'TTbot'

TEACHING

Digital System Design and Practices, *Dept. of ECE, Seoul National University*

Fall 2016

Tutor

- Covering the design of digital systems from the register transfer level design to the architecture level and the implementation of the modern digital system with a hardware description language such as Verilog

Basic Physics 2, *Dept. of Physics, Seoul National University*

Fall 2015

Tutor

TECHNICAL
SKILLS

Embedded System Development Techniques

- Experience of accelerating convolutional neural network with FPGA using Xilinx HLS
- Proficient with system Verilog and worked as a tutor to teach its usage and application

Programming Languages, APIs, and Frameworks

- Advanced in C/C++, Python, Java, Labview, MATLAB, Nodejs, OpenCV, TensorFlow, Caffe
- Moderate in C#, PHP, Lua, JavaScript, Django, AngularJS, Ionic, Android, AVR Studio

Robotics Tools

- ROS, gazebo, Solidworks, Universal Laser System Laser Cutter, Ultimaker 3D printer