

# YOUNGMOK YUN

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<http://youngmok.com>

## Education

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PhD 2012 Fall ~	- Rehabilitation and Neuromuscular (ReNeu) Robotics Lab, Mechanical Engineering, The University of Texas at Austin, TX, USA - Advisor : Prof. Ashish D. Deshpande
M.S. 2006 ~ 2008	- Robotics Lab, Mechanical Engineering, Pohang University of Science and Technology (POSTECH), Korea - Advisor : Prof. Wan Kyun Chung
B.S. 2002~ 2006	- Mechanical Engineering, POSTECH - Advisor : Prof. Wan Kyun Chung
High School 1999 ~ 2002	- Gyeonggi Science High School for the Gifted - (National school for the gifted)

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## Work Experience

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Jul. 2012 ~ Present	- <b>Design and Control of Exoskeleton for VR and Rehabilitation</b> - Funded by NASA and NSF, USA - PhD student, ReNeu Robotics Lab., The Univ. of Texas at Austin, TX, USA - Director: Prof. Ashish D. Deshpande
Jul. 2011 ~ Jul. 2012	- <b>Localization and Planning of Outdoor Mobile Robot</b> - Researcher, Korea Institute of Science and Technology (KIST) - Director: Dr. Changhwan Kim
Aug. 2010 ~ Jul. 2012	- <b>3D Simultaneous Localization and Mapping of Mobile Robot</b> - Visiting Researcher, Robotics Lab., Korea University - Advisor: Prof. Nakju Doh
Apr. 2008 ~ Jul. 2011	- <b>Mechatronic System Design &amp; Control for Automobile System Validation</b> - Assistant Researcher, Renault-Samsung Motors Technical Center - International project of Renault-Nissan for chassis system platform design - Served military duty
Mar. 2006 ~ Feb. 2008	- <b>Development of navigation and human-robot interaction techniques</b> - Robotics Lab., POSTECH - Project of Korean Ministry of Information and Communication - Advisor: Prof. Wankyun Chung
Mar. 2005 ~ Feb. 2006	- <b>Human-guided surgical robot system for spinal fusion surgery</b> - Research internship - Robotics Lab., POSTECH

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## Awards and Honors

2014 Fall ~ 2015 Summer	-	<b>UT Graduate School Named Continuing Fellowship</b> The Univ. of Texas at Austin
2014	-	Travel Grant, "Control in the Reliable Region of a Statistical Model with Gaussian Process Regression" <i>IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)</i>
2014	-	GAIN Poster Award, "UT Hand Exoskeleton for Rehabilitation and Teleoperation" Graduate Engineering Council, The Univ. of Texas at Austin
2014	-	Best Poster Award (First Place), "A Novel Hand Exoskeleton for Rehabilitation and Teleoperation" Research Poster Contest, Mech. Eng., The Univ. of Texas at Austin
2013	-	Student Travel Award, "Synthesis of Gait Kinematics Using a Database" Dynamic Walking 2013
2013	-	Best Poster Award (Second Place), "Design and Development of a Hand-Wrist Exoskeleton for Stroke Rehabilitation" Research Poster Contest, Mech. Eng., The Univ. of Texas at Austin
2012 Fall ~ 2014 Summer	-	<b>National Scholarship for PhD study</b> The Government of S. Korea
2006	-	Graduated Magna cum Laude, POSTECH
2004	-	Best presentation award, "Optimal transistor design with ANSYS" SATTI (Samsung Advanced Technology Training Institute)
2004	-	<b>President of student council of Mechanical Eng. Dept.</b> , POSTECH
2004 ~ 2008	-	<b>Two music albums released</b> as a guitarist of GT-love.
2002 ~ 2005	-	Hyogok Scholarship, POSTECH
2002	-	Physics Olympiad Scholarship, POSTECH

## Journal Article

-	<b>Y. Yun</b> , J. Ko, and A. D. Deshpande, "Control in the Reliable Region of a Statistical Model", <i>Transactions on Robotics</i> , 2016
-	P. Agarwal, J. Fox, <b>Y. Yun</b> , M. K. O'Malley, and A. D. Deshpande, "An Index Finger Exoskeleton with Series Elastic Actuation for Rehabilitation: Design, Control and Performance Characterization", <i>International Journal of Robotics Research</i> , 2015
-	<b>Y. Yun</b> , P. Agarwal, A. D. Deshpande, "Accurate, Robust, and Real-Time Pose Estimation of Finger ", <i>Journal of Dynamic Systems, Measurement and Control</i> , 2015
-	<b>Y. Yun</b> , H-C Kim, S. Shin, J. Lee, A. Deshpande and C. Kim, "Statistical Method for Prediction of Gait Kinematics with Gaussian Process Regression," <i>Journal of Biomechanics</i> , 2014
-	S. Yeon, C. Jun, H. Choi, J. Kang, <b>Y. Yun</b> , and N. Doh, "Robust-PCA based Hierarchical Plane Extraction for the Application of Geometric 3D SLAM," <i>Industrial Robot</i> , 2014

## Peer-reviewed Conference Papers

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- **Y. Yun**, P. Agarwal, J. Fox, K. E. Madden, and A. D. Deshpande, "Accurate Torque Control of Finger Joints with UT Hand Exoskeleton through Bowden Cable SEA" *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016

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  - C. Rose, F. Sergi, **Youngmok Yun**, K. Madden, A.D. Deshpande, M. O'Malley, "Characterization of a hand-wrist exoskeleton, READAPT, via kinematic analysis of redundant pointing tasks," *IEEE International Conference on Rehabilitation Robotics (ICORR)*, 2015

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  - **Youngmok Yun** and A. D. Deshpande, "Control in the Reliable Region of a Statistical Model with Gaussian Process Regression", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2014

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  - D. Chen, **Youngmok Yun** and A. D. Deshpande, "Experimental Characterization of Bowden Cable Friction", *IEEE International Conference on Robotics and Automation (ICRA)*, 2014

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  - **Youngmok Yun**, P. Agarwal, and A. D. Deshpande, "Accurate, Robust, and Real-time Estimation of Finger Pose with a Motion Capture System," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2013

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  - J. Lee, S. Shin, S. Lee, **Youngmok Yun**, S. Kim, and C. Kim, "SVM-based System for Point-to-Point Hand Movement," *IEEE/SICE International Symposium on System Integration (SII)*, 2012

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  - **Youngmok Yun**, J. Jin, N. Kim, J. Yoon, and C. Kim, "Outdoor localization with optical navigation sensor, IMU and GPS," *Int. Conf. on Multisensor Fusion and Integration for Intelligent Systems (MFI)*, pp. 377-382. IEEE, 2012

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  - S. Mondal, **Youngmok Yun**, and WK Chung, "Terminal Iterative Learning Control for Calibrating Systematic Odometry Errors in Mobile Robots," *IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics (AIM)*, 2010

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  - **Youngmok Yun**, B. Park, and WK Chung, "Odometry Calibration using Home Positioning Function for Mobile Robot," *IEEE Int. Conf. on Robotics and Automation (ICRA)*, 2008

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  - S. Mondal, **Youngmok Yun**, and WK Chung, "Calibration Technique for Odometry of Mobile Robots using Terminal Iterative Learning Control," *IEEE Int. Conf. on Ubiquitous Robots and Ambient Intelligence (URAI)*, 2008

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  - **Youngmok Yun**, WK Chung, and S. Nam, "Systematic Error Calibration of Mobile Robot using Home Positioning Function," *IEEE Int. Conf. on Ubiquitous Robots and Ambient Intelligence (URAI)*, 2008
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## Abstract

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- **Youngmok Yun** and A. D. Deshpande, "Synthesis of Gait Kinematics Using a Database," *Dynamic Walking*, 2013

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  - **Youngmok Yun** and A. D. Deshpande, "Statistical Functional Mapping from Body Parameters to Gait Kinematics," *American Society of Biomechanics (ASB)*, 2013
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## Media

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- Alcalade (Longhorn Network) (02/24/2014)
  - Alcalade Magazie (01/09/2014)
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## Teaching Experience

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|-------------------|---|---|
| Spring, 2016      | - | <b>Guest Lecturer, How Things Work, UGS 303</b> |
|                   | - | Mech. Eng. Dept, The Univ. of Texas at Austin   |
| Fall, 2012        | - | <b>TA, Dynamic System and Control Lab.</b>      |
|                   | - | Mech. Eng. Dept, The Univ. of Texas at Austin   |
| Fall, 2006        | - | <b>TA, Modern System Control</b>                |
|                   | - | Mech. Eng. POSTECH                              |
| 2004 F. ~ 2007 S. | - | <b>Mentor Program, Physics</b>                  |
|                   | - | POSTECH   |
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## Patent

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- "Odometry Calibration Method using Home-positioning for Mobile Robot", Patent No. 2007-81585 (Korea)
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## Technical Skills

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| Programming | - | C/C++ in RT-Linux/Windows for Intel/ARM processors, QT, OpenGL, ROS, Python, Matlab, Labview  |
| CAD         | - | Solidworks  |
| Actuator    | - | DC, BLDC, Servo, Stepping motors, Hydraulic, Pneumatic actuators, etc.  |
| Sensor      | - | Loadcell, Strain Gauge, LVDT, Laser scanners (SICK, Hokuyo), Mono/Stereo Camera (Bumblebee, Ladybug, Webcam), Sonar sensor, IMU, In/Outdoor (D)GPS, Many industrial sensors |
| Others      | - | Abundant mechatronic system design and controller tuning experience   |
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