

HUBERT J. KIM

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SUMMARY OF QUALIFICATIONS

Ph.D. candidate trained for 4+ years in the start-up robotics laboratory, with hands-on experience of the robot development and ability to lead a project independently or as a part of a team. Expertise in:

- Embedded Systems Programming
- Brushless DC Motor Control
- Fast Prototyping
- Digital Signal Processing

EDUCATION

Virginia Tech, College of Engineering *Blacksburg, VA*

Ph.D., Mechanical Engineering *Expected July 2020*

Dissertation: *Joint Torque Feedback for Arm Motion Training* | Advisor: Alan T. Asbeck

Award: ICTAS Doctoral Scholarship (4-year graduate fellowship)

Relevant Coursework: Fdbk Ctrl of Dynamic Legged Locomotion; Adaptive Control; Mechatronics.

NYU, Tandon School of Engineering *Brooklyn, NY*

B.S., *cum laude*, Mechanical Engineering (Minor in Mathematics) *May 2015*

Thesis: *Voltage Attenuation along the Electrodes of IPMCs* | Advisor: Maurizio Porfiri

Award: Best Mechanical Engineering Experience for Undergraduate

SKILLS

Technical Skills: Embedded systems programming (Code Composer Studio, C/C++, JavaScript)

Data analysis & Numerical simulation (MATLAB, National Instrument)

3D CAD (NX, Solidworks)

Others (Familiar with: Python, ROS)

Language Skills: Native in Korean

RESEARCH EXPERIENCE

Ph.D. Researcher | Virginia Tech, College of Engineering *Blacksburg, VA*

Arm Haptic Feedback Team, Assistive Robotics Laboratory *May 2015 - Present*

- Proposed a novel paradigm of a kinesthetic cue as a means of haptic information transfer
- Managed a project team consists of motor debugging position and human test position
- Conducted human subject testing with custom-built arm haptic exoskeleton
- Collaborated with experts from motor control and Statistics
- Supervised 2 senior design teams (Upper Body Exoskeletons) for robot design and control
- Trained 1 M.S. Student (Knee Exoskeleton Project) for registry-level programming

Undergraduate Researcher | NYU, Tandon School of Engineering *Brooklyn, NY*

Energy Harvesting Team, Dynamic System Laboratory *Mar 2013 - May 2015*

- Worked with a Ph.D. student for validating the theoretical model of smart materials
- Built data acquisition setup for smart materials in oscillatory motion with various conditions
- Analyzed transfer functions of the smart materials in terms of electrical/mechanical properties
- Published 5 journal papers (1 first-author, 1 co-author, 3 second-author)

Undergraduate Student | NYU, Tandon School of Engineering *Brooklyn, NY*

Capstone Project *Aug 2014 - May 2015*

- Collaborated with teams from multiple universities to discuss Asteroid Redirect Mission
- Built a tendon-actuated manipulator to detect and grab a spinning object
- Developed an Arduino-based robotic arm with a flex sensor
- Presented at ICED Epic Challenge Student Exposition, NASA Langley Research Center

SELECTED PUBLICATIONS AND PRESENTATIONS

Kim, H., Guo, H., Asbeck, A., 2019; "Just Noticeable Differences for Joint Torque Feedback During Static Poses", IEEE International Conference on Robotics and Automation, accepted

Kim, H., Asbeck, A.; Light-weight Exoskeleton for Haptic Feedback, Presented at IEEE/RSJ International Conference on Intelligent Robots and Systems, Daejeon, Republic of Korea, Oct 9-14, 2016; poster 1832

Kim, H., Cha, Y., Porfiri, M., 2016; "Voltage attenuation along the electrodes of ionic polymer metal composites", J.of Intell Mater Syst Struct, 27(17), 2426-2430

TEACHING EXPERIENCE

Graduate Student Advisor | Virginia Tech, College of Engineering *Blacksburg, VA*
Cornell Cup Robotics: Team ICARUS (Active Arm Exoskeleton) Feb 2019 - May 2019

- Held 3 embedded programming workshops for running the 5-DoF upper arm exoskeleton
- Escorted the team to the competition for final preparation
- The team successfully presented the robot at NASA Kennedy Space Center Visitor Center

Teaching Assistant | Virginia Tech, College of Engineering *Blacksburg, VA*
ME4015, Engineering Design and Project Aug 2015 - Dec 2015

- Managed 11 senior design teams for better communication with sponsors/clients

Tutor Fellow | NYU, Tandon School of Engineering *Brooklyn, NY*
Federal TRIO Center Aug 2013 - Dec 2013

- Taught undergraduates in Statics and Calculus on a weekly basis

HONORS

- Selected for New Horizon Graduate Scholars program at Virginia Tech *May 2015*
- Awarded for Founders' Day Award by NYU *Apr 2015*
- Member of Tau Beta Pi & Pi Tau Sigma

OTHER ACTIVITIES

Captain of Korean Graduate Basketball club, Virginia Tech Aug 2017 - Jun 2018
Passed NCEES: **FE exam**, NY 2015
Inno/Vention competition with prototyping Fund, NYU Entrepreneurs Lab 2014
Served Air Force in Republic of Korea Feb 2010 - Mar 2012

- military translator of Ammunition Stockpile Reliability Program from Raytheon