HUBERT KIM

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EDUCATION

Virginia Polytechnic Institute and State University, Blacksburg VA *May 2015 - Present*
Candidate for Ph.D. program in Mechanical Engineering
- Dissertation title: "Study of Kinesthetic Perception for Arm Motion Training "
  Advisor: Dr. Alan T. Asbeck

New York University Tandon School of Engineering, Bklyn NY *Sept 2012 - May 2015*
Bachelor of Science, Mechanical Engineering (Minor: Mathematics) *cum laude*
- Thesis title: "Voltage attenuation along the electrodes of ionic polymer metal composites"
  Advisor: Dr. Maurizio Porfiri

OBJECTIVE

A graduate researcher with 4+ years of experience in the start-up robotics laboratory. Developed the extensive, hands-on experience by leading a multi-disciplinary project from the robot design/development to validation on human subjects. Seeking a position as a roboticist/mechatronicist for a fast-paced team.

PROJECTS

Joint Torque Feedback for Arm Motion Training - Assistive Robotics Laboratory -
Research Assistant, Advisor: Dr. Alan T. Asbeck *May 2015 - Present*

· Developing a paradigm of the kinesthetic cue as a means of information transfer in arm motion training. The idea uses an exoskeleton as a partially-assisted device in terms of torque, minimizing the motor output not to disturb the wearer's motion during motion training. To validate the concept, a direct-driving haptic exoskeleton is fabricated through multiple iterations of fast-prototyping, along with the psychophysics tools realized in the graphical user interface. Journal work is currently undergoing both in hardware manuscripts and in the neuroscience field.

Cornell Cup Robotics: Active Arm Exoskeleton Team
Graduate Student Advisor, Advisor: Dr. Alan T. Asbeck *Feb 2019 - May 2019*

· Trained a senior design team in embedded programming. A five degree-of-freedom exoskeleton developed for industry workers, capable of providing gravity-compensation and force assistance for repeated motion. The team successfully presented the robot at NASA Kennedy Space Center Visitor Center.

Energy Harvesting with Smart Materials - Dynamic System Laboratory -
Undergraduate researcher, Advisor: Dr. Maurizio Porfiri *Mar 2013 - May 2015*

· Built various testbeds on signal processing applications for smart materials. Using the data acquisition board and high-speed camera, transfer functions of the smart materials in oscillatory motion were analyzed in both electrically and mechanically. All the experimental works were published in journal papers.

Capstone project: Asteroid Capture, Retrieval, Utilization and Mitigation Project
Advisors: Dr. Joseph Borowiec and Dr. Charles Camarda *Aug 2014 - May 2015*

· Simulate an end-effector that captures a mock asteroid in space. Built a tendon-actuated manipulator to detect and grab the spinning object using Arduino, flex sensors, and servo motors. The demonstration and final result were presented at ICED/AerosPACE Epic Challenge Student Exposition, NASA Langley Research Center.

TECHNICAL STRENGTHS

Embedded systems programming	Code Composer Studio, C++
Visual programming	JavaScript port for Processing
Data analysis & Numerical simulation	MATLAB
3D CAD	NX, Solidworks

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", Journal of Intelligent Material Systems and Structures, 27(17), 2426-2430.
- Cha, Y.; Chae, W.; **Kim, H.**, 2015; Walcott, H.; Peterson, S.; "Energy harvesting from a piezoelectric biomimetic fish tail", Renewable Energy 86, 449458.
- Cha, Y., **Kim, H.**, Porfiri, M., 2014: "Matching the impedance of ionic polymer metal composites for energy harvesting", Smart Materials and Structures 23(12), 127002.
- Cha, Y., **Kim, H.**, Porfiri, M., 2014: "Influence of temperature on the impedance of ionic polymer metal composites", Materials Letters 133, 179-182.
- Cha, Y., **Kim, H.**, Porfiri, M., 2013: "Energy harvesting from underwater base excitation of a piezoelectric composite beam", Smart Materials and Structures 22(11), 115026.

HONORS

- ICTAS Doctoral Scholarship, Virginia Tech. *Aug 2015 - Dec 2019*
- New Horizon Graduate Scholars program, Virginia Tech. *Aug 2015*
- Awarded for Founders Day Award by NYU. *Apr 2015*
- Awarded for Best Mechanical Engineering Experience for Undergraduate by NYU. *May 2014*

TEACHING EXPERIENCE

- Teaching assistant for ME4015, Engineering Design and Project. *Aug 2015 - Dec 2015*
- Tutored in Federal TRIO Center, subjects: Statics, Calculus. *Aug 2013 - Dec 2013*

LANGUAGES

Native in Korean and English (dual citizenship with Republic of Korea and USA).

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 in Spring 2014 from NYU Entrepreneurs Lab.
- Member of the NY Rho Chapter of Tau Beta Pi & Pi Tau Sigma.
- Served Air Force in Republic of Korea : *Feb 2010 - Mar 2012*

military translator of Ammunition Stockpile Reliability Program from Raytheon.