Hangue Park

Assistant Professor, Global Biomedical Engineering, SungKyunKwan University
Adjunct Faculty, Electrical and Computer Engineering, Texas A&M University

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Email: hangue.park@tamu.edu, Homepage: www.hangue.com (Integrated NeuroProsthesis Lab), Phone: 979-458-7853

Research Interest:

- Closed-loop neuro-stimulation and neuro-electronic system
- Integrated biomedical circuits and systems for wearable/implantable device
- Motor neuro-rehabilitation after spinal cord injury/stroke
- Human augmentation and motor skill improvement

Education:

- **Doctor of Philosophy in Electrical and Computer Engineering (Minor: Biomedical Engineering)** **Jul. 2017**
  Institution: Georgia Institute of Technology, Atlanta, GA, United States of America
  Advisor: Dr. Stephen P. DeWeerth (steve.deweerth@lehigh.edu)
  Co-advisor: Dr. Boris I. Prilutsky (boris.prilutsky@biosci.gatech.edu)
  Project: Bi-directional Neuro-prosthesis for Amputee Cats (2014-2017), Thesis title: Gait Optimization with a Real-Time Closed-Loop Artificial Sensory Feedback
  Intraoral Tongue Drive System (2010-2013)

- **Certificate of program "Technological Innovation: Generating Economic Results (TI:GER®)"** **May 2013**
  Institution: Georgia Institute of Technology, Atlanta, GA, United States of America
  Director: Dr. Margi Berbari (margi.berbari@scheller.gatech.edu)
  Project: Build a business plan for "Tungo: Better Mobility, Harnessing the Power of the Tongue" as a team with two MBA students and two law school students (2011-2013)

- **Master of Science in Electrical and Computer Engineering** **Feb. 2008**
  Institution: Seoul National University, Seoul, Korea
  Advisor: Dr. Sangwook Nam (snam@snu.ac.kr)
  Project: Wireless Capsule Endoscopy System (2006-2008), Thesis title: A CMOS Wideband Analog Front-end with Automatic Gain Control circuit

- **Bachelor of Science in Electrical and Computer Engineering, Cum laude** **Feb. 2006**
  Institution: Seoul National University, Seoul, Korea
  Advisor: Dr. Young June Park (ypark@snu.ac.kr)
  Project: Design of the off-the-shelf Phase Locked Loop

Industrial Experience:

- **Samsung Electronics, Communications R&D Center** **Aug. 2008 - Apr. 2010**
  Digital RF transceiver architecture, Tunable blocker-canceling low-noise amplifier design, Tunable high-Q filter design, Voltage-controlled oscillator/phase-locked loop design for cellphone applications

- **Samsung Advanced Institute of Technology** **Feb. 2008 - Jul. 2008**
  FET layout to increase F_{max}, 60GHz voltage-controlled oscillator design

- **Bluebird Soft, Co., Ltd** **Aug. 2001 - Aug. 2004**
  Embedded system design of industrial personal digital assistant, "BIP1100" (sold to top three department stores and won the industrial design award 2004 from Ministry of Commerce, Industry and Energy, South Korea)

Awards (as an individual or a team):

- Nominated for COE TEES Young Faculty Fellow Award, ***Texas A&M University*** **Jan. 2022**
- Trainee Professional Development Award, ***Society for Neuroscience*** **Nov. 2017**
- Outstanding Research Award for Predoctoral Students, ***Association of Korean Neuroscientists*** **Nov. 2016**
- Honorable mention, 20th Samsung Human-Tech Paper Award, ***Samsung Electronics*** **Feb. 2014**
- Best Demonstration Award, ***IEEE Biomedical Circuits and Systems Conference*** **Nov. 2012**
- Finalist, 8th Inside-Edge Paper Award, ***Samsung Electro-Mechanics*** **Aug. 2012**
- 2nd Place Award, Business Plan Competition (BPC) 2012, Scheller College of Business, ***Georgia Tech*** **Mar. 2012**
- Best Product Showcase Award, BPC 2012, Scheller College of Business, ***Georgia Tech*** **Mar. 2012**
- The LEO Award - People's Choice, ***National MS Society, Michigan Chapter*** **Nov. 2010**

Awards (lab's achievement; as a corresponding author):

- 1st place Poster Presentation Award, Graduate section, ***Texas A&M Student Research Week*** **Mar. 2022**
- 1st place Oral Presentation Award, PhD Students section, ***The Texas A&M University System (TAMUS) Pathways Student Research Symposium*** **Mar. 2022**
- 2nd place Poster Presentation Award, ***Annual Mission Connect Symposium by TIRR foundation*** **Dec. 2019**
- 1st place Poster Presentation Award, Graduate section, ***Texas A&M Chapter of the Society for Neuroscience*** **Apr. 2019**
- 1st place Poster Presentation Award, Graduate section, ***Texas A&M Student Research Week*** **Mar. 2019**
- 2nd place Poster Presentation Award, Graduate section, ***Texas A&M Student Research Week*** **Mar. 2019**
- 3rd place Award, ***Texas Regional Engineering Conference at Texas A&M University*** **Mar. 2018**

Journal Publications:

36) Kim J, Ham Y, and **Park H**, "Underground Metal Pipeline Localization using Low-cost Wireless Magnetic Sensor Array Mounted on an Excavator," ***IEEE Transactions on Industrial Electronics***, Oct. 2022.

35) Das H and **Park H**, "MCU-less Biphasic Electrical Stimulation Circuit for Miniaturized Neuromodulator," ***Biomedical Engineering Letters***, 12(3):285-93, Aug. 2022.

34) Jiang B, Kim J, and **Park H**, "Palatal Electrotactile Display Outperforms Visual Display in Tongue Motor learning," ***IEEE Transactions on Neural Systems and Rehabilitation Engineering***, Mar. 2022.

33) Lee J, Ham Y, **Park H**, and Kim J, "Challenges, Tasks, and Opportunities in Teleoperation of Excavator towards Human-in-the-loop Construction Automation," ***Automation in Construction***, 135:104119, Mar. 2022.

32) Mooti R and **Park H**, "Contribution of Cervical Proprioception, Vision, and Vestibular Feedback on Reducing Dynamic Head-Trunk Orientation Error in the Yaw Direction," ***Frontiers in Neuroscience***, 1849, Jan. 2022.

31) Dollahon D, Ryu S, and **Park H**, "Pinching Force Changes by Modulating the Interaction Gain over the Fingertip," ***IEEE Access***, 10:9744-9749, Jan. 2022.

30) Kim J, Knox D, and **Park H**, "Forehead Phantom Sensation is Augmented by the Perceived Risk and Increases Tactile Sensitivity," ***Sensors***, 21(24):8246, Jan. 2022.

29) Park B, Biswas S, and **Park H**. "Electrical Characterization of the Tongue and the Soft Palate for Intraoral Neuromodulation," ***IEEE Transactions on Biomedical Engineering***, 68(10):3151-3160, Oct. 2021.

28) Barreto L, Shon A, Knox D, Song H, **Park H**, and Kim J, "Motorized Treadmill and Optical Recording System for Gait Analysis of Grasshoppers," ***Sensors,*** 21(17):5953, Sep. 2021.

27) Tang S, Yang X, Shajudeen P, Sears C, Taraballi F, Weiner B, Tasciotti E, Dollahon D, **Park H**, and Righetti, R. "A CNN-based method to reconstruct 3-D spine surfaces from US images in vivo," ***Medical Image Analysis***, 102221, Sep. 2021.

26) Shon A, Brakel K, Hook M, and **Park H**. "Closed-loop Plantar Cutaneous Augmentation by Electrical Nerve Stimulation increases Ankle Plantarflexion at Treadmill Walking," ***IEEE Transactions on Biomedical Engineering***, 68(9):2798-2809, Sep. 2021.

25) Rangwani R and **Park H**. "A New approach of inducing Proprioceptive Illusion by Transcutaneous Electrical Stimulation," ***Journal of NeuroEngineering and Rehabilitation***, 18(1):1-16, May 2021.

24) Shon A, Brakel K, Hook M, and **Park H**. "Fully Implantable Plantar Cutaneous Augmentation System for Rats using Closed-loop Electrical Nerve Stimulation," ***IEEE Transactions on Biomedical Circuit and Systems***, 15(2):326-338, Apr. 2021. (Featured article)

23) Pitkin M, Cassidy C, Shevtsov M, Jarrell J, **Park H**, Farrell B, Dalton J, Childers WL, Kistenberg RS, Oh K, Klishko AN, and Prilutsky BI. "Recent Progress in Animal Studies of the Skin- and Bone-integrated Pylon With Deep Porosity for Bone-Anchored Limb Prosthetics With and Without Neural Interface," ***Military Medicine,*** 186:688-695, Jan. 2021.

22) Azbell J, Park J, Chang S-H, Engelen M, and **Park H**. "Plantar or Palmar Tactile Augmentation Improves Lateral Postural Balance with Significant Influence from Cognitive Load," ***IEEE Transactions on Neural Systems and Rehabilitation Engineering***, 29:113-122, Nov. 2020. (Featured article)

21) Latash EM, Barnett WH, **Park H**, Rider JM, Klishko AN, Prilutsky BI, and Molkov YI. "Frontal plane dynamics of the centre of mass during quadrupedal locomotion on a split-belt treadmill," ***Journal of the Royal Society Interface***, 30;17(170):20200547, Sep. 2020.

20) Jiang B, Kim J, and **Park H**. "A New Approach of Minimizing Midas Touch Problem for a Tracer-Free Tongue-Controlled Assistive Technology," ***IEEE Sensors journal***, 3;21(1):743-54, Aug 2020.

19) Park JK, Deutz DE, Cruthirds CL, Kirschner SK, **Park H**, Madigan ML, and Engelen MP, "Risk Factors for Postural and Functional Balance Impairment in Patients with Chronic Obstructive Pulmonary Disease," ***Journal of Clinical Medicine***, 9(2):609, Feb. 2020.

18) Zhao A, Yeo M, Manoharan S, Ryu S, and **Park H**, "Electrically-Evoked Artificial Proximity Sensation Enhanced Fine Finger Control in Telerobotic Pinch," ***Scientific Reports***: *Special issue on Neuroprosthetics in Systems Neuroscience and Medicine*, 13;10(1):1-2, Jan. 2020.

17) Nguyen TD, **Park H**, and Hong JP, "A Millimeter-Wave Fundamental Frequency CMOS-Based Oscillator with High Output Power," ***Electronics***, 8(11), Nov. 2019. (Invited paper)

16) **Park H,** Latash EM, Morkov YI, Klishko AN, DeWeerth SP, Frigon A, and Prilutsky BI, "Cutaneous sensory feedback from paw pads affects balance control during split-belt treadmill locomotion in the cat," ***Journal of Experimental Biology,*** 222(14): jeb198648, Jul. 2019.

15) **Park H,** Islam MS, Grover MA, Klishko AN, Prilutsky BI, and DeWeerth SP, "A Prototype of a Neural, Powered, Transtibial Prosthesis for the Cat: Benchtop Characterization," ***Frontiers in Neuroscience****: Special issue on Neural Prostheses for Locomotion*, vol. 12, Jul. 2018. (Invited paper)

14) Kim J, **Park H**, Bruce J, Rowles D, Holbrook J, Minocha J, Laumann A, Roth E, Jones M, and Ghovanloo M, "Assessment of Tongue Drive System Assistive Technology on Computers and Wheelchairs for People with Tetraplegia," ***IEEE Transactions on Neural Systems and Rehabilitation Engineering****,* vol. 24, no. 1, pp. 68-78, Jan. 2016. (Featured article)

13) **Park H** and Ghovanloo M, "Wireless Communication of Intraoral Devices and Its Optimal Frequency Selection," ***IEEE Transactions on Microwave Theory and Techniques****,* vol. 62, no. 12, pp. 3205-3215, Dec. 2014.

12) **Park H** and Ghovanloo M, "An Arch-Shaped Intraoral Tongue Drive System with Built-in Tongue-Computer Interfacing SoC," ***Sensors****,* vol. 14, no. 11, pp. 21565-21587, Nov. 2014. (Invited paper)

11) Kim J, **Park H**, Bruce J, Sutton E, Rowles D, Pucci D, Holbrook J, Minocha J, Nardone B, West D, Laumann A, Roth E, Jones M, Veledar E, and Ghovanloo M, "The Qualitative Assessment of Tongue Drive System by People with High-level Spinal Cord Injuries," ***Journal of Rehabilitation Research & Development****,* vol. 51, no. 3, pp. 451-466, Jun. 2014.

10) Kim J, **Park H**, Bruce J, Sutton E, Rowles D, Pucci D, Holbrook J, Minocha J, Nardone B, West D, Laumann A, Roth E, Jones M, Veledar E, and Ghovanloo M, "The Tongue Enables Computer and Wheelchair Control for People with Spinal Cord Injury," ***Science Translational Medicine****,* vol. 5, no. 213, p. 213ra166, Nov. 2013. (Featured article)

9) Huo X, **Park H**, Kim J, and Ghovanloo M, "A Dual-mode Human Computer Interface Combining Speech and Tongue Motion for People with Severe Disabilities," ***IEEE Transactions on Neural Systems and Rehabilitation Engineering****,* vol. 21, no. 6, pp. 979-991, Nov. 2013.

8) Lee H, **Park H**, and Ghovanloo M, "A Power-efficient Wireless System with Adaptive Supply Control for Deep Brain Stimulation," ***IEEE Journal of Solid State Circuits***, vol. 48, no. 9, pp. 2203-2216, Sep. 2013.

7) **Park H** and Ghovanloo M, "A 13-bit noise shaping SAR–ADC with dual-polarity digital calibration," ***Analog***

Integrated Circuits and Signal Processing, vol. 75, no. 3, pp. 459-465, Jun. 2013.

6) **Park H**, Kiani M, Lee H, Kim J, Block J, Gosselin B, and Ghovanloo M, "A Wireless Magnetoresistive Sensing System for an Intraoral Tongue-Computer Interface," ***IEEE Transactions on Biomedical Circuits and Systems,*** vol. 6, no. 6, pp. 571–585, Dec. 2012. (Invited paper)
5) **Park H**, Zeong J, Choi W, and Choi J, "The Q-enhanced CMOS Active Bandpass Filter with Two-stage Self-calibration," ***IEICE Transactions on Electronics,*** vol. E93-C, no.12, pp 1700-1703, Dec. 2010.
4) Lee S, Lee J, **Park H**, Lee K, and Nam S, "Self-calibrated Two-point Delta–Sigma Modulation Technique for RF Transmitters," ***IEEE Transactions on Microwave Theory and Techniques,*** vol. 58, no. 7, pp. 1748-1757, Jul. 2010
3) **Park H**, Lee S, Jeon S, and Nam S, "A 0.1-1GHz CMOS Variable Gain Amplifier using a Wideband Negative Capacitance," ***IEICE Transactions on Electronics,*** vol. E92-C, no.10, pp. 1311-1314, Oct. 2009.
2) **Park H**, Lee S, and Nam S, "A 2.3-7GHz CMOS High Gain LNA using CS–CS Cascode with Coupling C," ***IEICE Transactions on Electronics***, vol. E92-C, no. 8, pp. 1091-1094, Aug. 2009.
1) **Park H**, Lee J, Lee J, and Nam S, "A CMOS RF Power Detector using an Improved Unbalanced Source Coupled Pair," ***IEICE Transactions on Electronics,*** vol. E91-C, no.12, pp. 1969-1970, Dec. 2008.

Conference Proceedings (peer-reviewed, ≥ 4 pages):

18) Manoharan S, Oh S, Jiang B, Patton J, and **Park H**, "Electro-prosthetic E-skin Successfully Delivers Finger Aperture Distance by Electro-Prosthetic Proprioception (EPP)," ***proceedings of the IEEE Engineering in Medicine and Biology Society***, Jul. 2022.
17) Oh S, Patton J, and **Park H**, "Electro-prosthetic E-skin Successfully Delivers Elbow Joint Angle Information by Electro-prosthetic Proprioception (EPP)," ***proceedings of the IEEE Engineering in Medicine and Biology Society***, Jul. 2022.
16) Dollahon D, Ryu S, and **Park H**, "A Computational Internal Model to Quantify the Effect of Sensorimotor Augmentation on Motor Output," ***proceedings of the IEEE Engineering in Medicine and Biology Society***, Jul. 2020.
15) Lee H, **Park H**, and Lee H, "A Multi-Channel Neural Recording System with Adaptive Electrode Selection for High-Density Neural Interface," ***proceedings of the IEEE Engineering in Medicine and Biology Society***, Jul. 2020.
14) Jiang B, Biyani S, and **Park H**, "A wearable intraoral system for speech therapy using real-time closed-loop artificial sensory feedback to the tongue," ***proceedings of the IEEE EMBS Conference on Neural Engineering***, Mar. 2019.
13) Manoharan S and **Park H**, "Supernumerary body schema extension to non-corporeal object by adding artificial tactile feedback using electrical stimulation," ***proceedings of the IEEE EMBS Conference on Neural Engineering***, Mar. 2019.
12) Azbell J, Park JK, Chang SH, Engelen MP, and **Park H**, "Closed-loop tactile augmentation by transcutaneous stimulation on either the foot sole or the palm to improve lateral postural balance," ***proceedings of the IEEE EMBS Conference on Neural Engineering***, Mar. 2019.
11) Biyani S, Biswas S, and **Park H**, "An intraoral closed-loop monitoring and stimulation system for treatment of swallowing problem," ***proceedings of the IEEE EMBS Conference on Neural Engineering***, Mar. 2019.
10) Rangwani R and **Park H**, "Surface EMG robotic arm control system with vibration induced proprioceptive feedback," ***proceedings of the IEEE EMBS Conference on Neural Engineering***, Mar. 2019.
9) Shon A, Geoffroy C, and **Park H**, "Real-time Electrocolonogram monitoring and electrical stimulation system for promoting mass peristalsis of the colon," ***proceedings of the IEEE EMBS Conference on Neural Engineering***, Mar. 2019.
8) **Park H**, Oh K, Prilutsky BI, and DeWeerth SP, "A Real-time Closed-loop Control System for Modulating Gait Characteristics via Electrical Stimulation of Peripheral Nerves," ***proceedings of the IEEE Biomedical Circuits and Systems Conference***, pp. 95-98, Oct. 2016.
7) **Park H**. "Wireless Intraoral Device: Current advances and remaining hurdles," ***proceedings of the Emerging Technologies Conference***, vol. 5: Biotechnology Track. May 2016.
6) **Park H**, Kim J, and Ghovanloo M, "Live Demonstration: Intraoral Tongue Drive System," ***proceedings of the***

IEEE Biomedical Circuits and Systems Conference, p. 81, Nov. 2012.

5) **Park H**, Kim J, and Ghovanloo M, "Development and Preliminary Evaluation of an Intraoral Tongue Drive System," ***proceedings of the IEEE Engineering in Medicine and Biology Society Conference***, pp. 157-1160, Aug. 2012.
4) Kim J, **Park H**, and Ghovanloo M, "Tongue-operated Assistive Technology with Access to Common Smartphone Applications via Bluetooth Link," ***proceedings of the IEEE Engineering in Medicine and Biology Society Conference***, pp. 4054-4057, Aug. 2012.
3) **Park H**, Gosselin B, Kiani M, Lee H, Kim J, Huo X, and Ghovanloo M, "A Wireless Magnetoresistive Sensing System for an Intra-oral Tongue-computer Interface," ***proceedings of the IEEE International Solid-State Circuits Conference***, pp. 124–126, Feb. 2012.
2) **Park H**, Kim J, Huo X, Hwang I, and Ghovanloo M, "New Ergonomic Headset for Tongue-drive System with Wireless Smartphone Interface," ***proceedings of the IEEE Engineering in Medicine and Biology Society Conference***, pp 7344-7347, Aug. 2011.
1) **Park H**, Lee S, and Nam S, "An Inductorless CMOS 0.1-1GHz Automatic Gain Control Circuit" ***proceedings of the IEEE European Microwave Conference***, EUMC24-3, Oct. 2008.

Conference Proceedings (peer-reviewed, 1 page abstract):

16) **Park H**, Jiang B, and Kim J, "Electrotactile Display for Learning the Unusual Tongue Maneuver in Tongue-operated Assistive Technologies," ***The US-KOREA Conference on Science, Technology, and Entrepreneurship (UKC)***, Dec. 2021.
15) Dollahon D and **Park H**, "Internal Model with Interaction Gain and Feedback Contribution Successfully Interprets Weight Distribution According to the Asymmetry in Plantar Pressure," ***Annual Meeting of Society for Neuroscience (SfN)***, Nov. 2021.
14) Jiang B, Kim J, and **Park H**, "Both Tactile and Visual Feedback Improves Tongue Motor Ability in Pointing the Target on Palatal Surface, but Only Tactile Feedback Led to Stronger Retention," ***Annual Meeting of Society for Neuroscience (SfN)***, Nov. 2021.
13) Manoharan S and **Park H**, "Alternating Rhythmic Finger Tapping is Strongly Correlated with Rudimentary Grasping Pattern," ***Annual Meeting of Society for Neuroscience (SfN)***, Nov. 2021.
12) Ravichandran R, Patton J, and **Park H**, "A Novel Electro-prosthetic Proprioception Reduces Visual-Proprioceptive Matching Error for Finger Aperture Control," ***Annual Meeting of Society for Neuroscience (SfN)***, Nov. 2021.
11) Ravichandran R, Patton J, and **Park H**, "A Novel Electro-prosthetic Proprioception by Distance-based Electrical Stimulation for Finger Aperture Control," ***Annual Meeting of IEEE Engineering in Medicine and Biology Society***, Oct. 2021.
10) Zhao Z, Kim J, and **Park H**, "Individual Characterization of Drawing Pattern in a Pattern Lock Application of the Smartphone," ***Annual Meeting of IEEE Engineering in Medicine and Biology Society***, Oct. 2021.
9) Zhao Z, Yeo M, Manoharan S, Ryu S, and **Park H**, "Electrically-evoked proximity sensation on the fingertip, via transcutaneous electrical stimulation, improves force control at telerobotic operations," ***Annual Meeting of Society for Neuroscience (SfN)***, Oct. 2019.
8) Shon A, Kiralyn B, Hook M, and **Park H**, "A fully-implantable closed-loop stance detection and plantar cutaneous augmentation system to promote gait rehabilitation after spinal cord injury," ***Annual Meeting of Society for Neuroscience (SfN)***, Oct. 2019.
7) Manoharan S and **Park H**, "Teleoperator can tell size and softness of the object without vision to the robotic hand, if tactile feedback from the fingertips and force feedback from finger joints are provided," ***Annual Meeting of Society for Neuroscience (SfN)***, Oct. 2019.
6) Azbell J, Park JK, Chang SH, Engelen MP, and **Park H**, "Plantar Tactile Augmentation Improves Lateral balance with and without Cognitive Load, but Palmar Tactile Augmentation Improves Lateral Balance only without Cognitive Load," ***Annual Meeting of Society for Neuroscience (SfN)***, Oct. 2019.
5) Prilutsky B, **Park H**, Oh K, Dalton JF, DeWeerth SP, Pitkin M, Klishko AN, and Prilutsky BI, "Bidirectional control of a sensing powered transtibial prosthesis during walking in the cat," ***Annual Meeting of Society for Neuroscience (SfN)***, Oct. 2019.

4) Park JK, Deutz NE, Byju AG, Reddy CP, **Park H**, Cruthirds CL, Jeon BH, Kirschner SK, Madigan ML, and Engelen MP, "Use of Oxygen Therapy, Cognitive Dysfunction, and Comorbidities Are Risk Factors for Impaired Balance Function in Chronic Obstructive Pulmonary Disease," B60. PULMONARY REHABILITATION: GENERAL (pp. A3743-A3743). ***American Thoracic Society***. May. 2019.

3) **Park H**, Mehta R, DeWeerth SP, Gregor RJ, and Prilutsky BI, "Closed-loop Control of a Transtibial Prosthesis with Active Ankle Joint and Sensory Feedback," ***Annual Meeting of Society for Neuroscience (SfN)***, Nov. 2017.

2) **Park H**, Mehta R, DeWeerth SP, Gregor RJ, and Prilutsky BI, "Modulation of Input from Paw Cutaneous Afferents and Quadriceps–Sartorius Stretch Afferents Differentially Affects Lateral Static and Dynamic Stability During Cat Split-belt Locomotion," ***Annual Meeting of Society for Neuroscience (SfN)***, Nov. 2016.

1) **Park H**, Mehta R, DeWeerth SP, and Prilutsky BI, "Modulation of Afferent Feedback from Paw Pad Afferents Affects Interlimb Coordination and Adaptation to Split-belt Treadmill Locomotion in the Cat," ***Annual Meeting of Society for Neuroscience (SFN)***, Oct. 2015.

Poster Presentations at Conference without proceeding:

30) Shon A, Kiralyn B, Hook M, and **Park H**, "A fully-implantable closed-loop stance detection and plantar cutaneous augmentation system to promote gait rehabilitation after spinal cord injury," ***Annual Mission Connect Symposium by TIRR foundation***, Dec. 2019.

29) Azbell J, Park JK, Chang SH, Engelen MP, and **Park H**, "Plantar Tactile Augmentation Improves Lateral balance with and without Cognitive Load, but Palmar Tactile Augmentation Improves Lateral Balance only without Cognitive Load," ***Annual Mission Connect Symposium by TIRR foundation***, Dec. 2019. - 2nd place award received (Traumatic Brain Injury section).

28) Pitkin M, Cassidy C, Shevtsov M, Jarrell G, **Park H**, Farrell B, Dalton J, Childers WL, Temenoff J, Oh K, Klishko AN, and Prilutsky BI, "Animal studies of the Skin and Bone Integrated Pylon with deep porosity for bone-anchored limb prosthetics with and without neural interface," ***Military Health System Research Symposium*** MHSRS-19-00758, Aug. 2019.

27) Childers LW, Jarrell JR, Klishko AN, **Park H**, Oh K, Grant CN, Jeffers MK, Herrin KR, Dalton IV JF, Pitkin M, and Prilutsky BI, "Ankle Power of Transtibial Bone-Anchored Prosthesis with Carbon Fiber and Fiberglass Passive Foot in Walking Cats," In: ***ISB XXVII Congress Calgary***, Canada, Aug. 2019.

26) Manoharan S and **Park H**, "Supernumerary Body Schema Extension to Non-Corporeal Object by Adding Artificial Tactile Feedback using Electrical Stimulation," ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019.

25) Jiang B, Biyani S, and **Park H**, "A Wearable Intraoral System for Speech Therapy using Real-Time Closed-Loop Artificial Sensory Feedback to the Tongue," ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019.

24) Biyani S, Biswas S, and **Park H**, "An Intraoral Closed-Loop Monitoring and Stimulation System for Treatment of Swallowing Problems," ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019. - 1st place award received (among the graduate session posters).

23) Rangwani R and **Park H**, "Vibration Induced Proprioceptive Modulation in Surface-EMG Based Control of a Robotic Arm," ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019.

22) Azbell J, Park JK, Chang SH, Engelen MP, and **Park H**, "Closed-loop Tactile Augmentation by Transcutaneous Stimulation on either the Foot Sole or the Palm to Improve Lateral Postural Balance," ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019.

21) Shon A, Geoffroy C, and **Park H**, "A Real-time Electrocolonogram Monitoring and Electrical Stimulation System for Promoting Mass Peristalsis of the Colon." ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019.

20) Mooti R and **Park H**, "Study of the Role of Visual and Proprioceptive Feedback in Controlling Head Orientation, with Teleoperating Robot." ***2019 Texas A&M Chapter of the Society for Neuroscience***. Apr. 2019.

19) Jiang B, Kim J, and **Park H**, "Multifunctional intraORal Assistive Technology (MORA) with Intuitive Intraoral Commands and Sensory Feedback," ***IEEE EMBS Conference on Neural Engineering***, Mar. 2019.

18) Mooti R and **Park H**, "Study of the Role of Visual and Proprioceptive Feedback in Controlling Head Orientation, with Teleoperating Robot," ***IEEE EMBS Conference on Neural Engineering***, Mar. 2019.

17) Manoharan S and **Park H**, "Supernumerary Body Schema Extension to Non-Corporeal Object by Adding Artificial Tactile Feedback using Electrical Stimulation," ***2019 Texas A&M Student Research Week***. Mar. 2019.

16) Jiang B, Biyani S, and **Park H**, "A Wearable Intraoral System for Speech Therapy using Real-Time Closed-Loop Artificial Sensory Feedback to the Tongue," ***2019 Texas A&M Student Research Week***. Mar. 2019.

15) Biyani S, Biswas S, and **Park H**, "An Intraoral Closed-Loop Monitoring and Stimulation System for Treatment of Swallowing Problems," ***2019 Texas A&M Student Research Week.*** Mar. 2019. - 1st place award received (among the graduate session posters).

14) Rangwani R and **Park H**, "Vibration Induced Proprioceptive Modulation in Surface-EMG Based Control of a Robotic Arm," ***2019 Texas A&M Student Research Week***. Mar. 2019.

13) Azbell J, Park JK, Chang SH, Engelen MP, and **Park H**, "Closed-loop Tactile Augmentation by Transcutaneous Stimulation on either the Foot Sole or the Palm to Improve Lateral Postural Balance," ***2019 Texas A&M Student Research Week.*** Mar. 2019. - 2nd place award received (among the graduate session posters).

12) Shon A, Geoffroy C, and **Park H**, "A Real-time Electrocolonogram Monitoring and Electrical Stimulation System for Promoting Mass Peristalsis of the Colon." ***2019 Texas A&M Student Research Week***. Mar. 2019.

11) Mooti R and **Park H**, "Study of the Role of Visual and Proprioceptive Feedback in Controlling Head Orientation, with Teleoperating Robot." ***2019 Texas A&M Student Research Week***. Mar. 2019.

10) **Park H**, Islam MS, Grover M, Prilutsky BI, and DeWeerth SP, "Closed-loop Control of the Cat Hindlimb Prosthesis with Active Ankle Joint and Sensory Feedback," ***Decision and Control Laboratory (DCL) Symposium***, Apr. 2017.

9) **Park H**, Oh K, Prilutsky BI, and DeWeerth SP. "A Real-Time Closed-loop Control System for Modulating Gait Characteristics via Electrical Stimulation of Peripheral Nerves," ***IEEE Brain Circuits and Systems Conference (BrainCAS)***, Oct. 2016.

8) **Park H**, Oh K, Prilutsky BI, and DeWeerth SP, "Closed-loop Gait Optimization in Cats with Incomplete Tactile Sensation from Paw Pads, using the Artificial Sensory Feedback," Career, Research, ***Innovation and Development Conference (CRIDC)***, Mar. 2016.

7) **Park H**, Prilutsky BI, and DeWeerth SP, "Peripheral Sensory Feedback to Improve Gait with a Feline Hindlimb Prosthesis," ***Annual Meeting of Biomedical Engineering Society (BMES)***, Oct. 2014.

6) **Park H**, Kim J, Huo X, and Ghovanloo M, "Tongue Drive System," Ability Expo, Feb. 2013.

5) **Park H**, Kim J, Huo X, and Ghovanloo M, "A Wireless Magnetoresistive Sensing System for Intraoral Tongue-Computer Interface," ***Georgia Tech Research Innovation Conference (GTRIC)***, Jan. 2013.

4) **Park H**, Kim J, Huo X, and Ghovanloo M, "A Wireless Magnetoresistive Sensing System for an Intraoral Tongue–Computer Interface," ***Georgia Electronic Design Center (GEDC) Industrial Review***, Apr. 2012.

3) **Park H**, Kim J, Huo X, Hwang I, and Ghovanloo M, "New Ergonomic Headset for Tongue-drive System with wireless smartphone interface," ***Rehabilitation Engineering and Assistive Technology Society of North America***, Jun. 2011.

2) **Park H**, Kim J, Huo X, Hwang I, and Ghovanloo M, "New Ergonomic Headset for the Tongue-Drive System (TDS)," ***Georgia Tech Center for Assistive Technology and Environmental Access (CATEA) Open house***, Apr. 2011.

1) **Park H**, Kim J, Huo X, and Ghovanloo M, "Tongue Drive: A Tongue-operated Wireless Assistive Technology for People with Severe Disabilities," ***Georgia Electronic Design Center (GEDC) Industrial Review***, Apr. 2011.

Book Chapters

Park H, Ghovanloo M, "A wireless intraoral tongue-computer interface," in *Wireless Medical Systems and Algorithms: Design and Applications* (edited by Pietro Salvo and Miguel Hernandez-Silveira), Boca Raton, FL: **CRC Press**, 2016.

Patents

9) **Park H**, Ryu S, Biswas S, "Distance-dependent electrotactile sensation to enhance control accuracy of end effector in surgery," Application date: Nov. 06th, 2020, U.S. PCT application PCT/2020/63110739

8) Biswas S, **Park H**, "Intraoral Neuromodulation," Application date: Dec. 20th, 2019, U.S. PCT application PCT/2019/067923.

7) **Park H**, Kim J, DeWeerth SP, "Apparatus and System for Electrically Stimulating the Oral Cavity," Filing date: Oct. 30, 2017, U.S. Provisional Application Serial No. 62/578,720.

6) Zeong J, **Park H**, Kim B, Lee J, Choi J, "Apparatus and method for improving linearity of transmitter," Publication date: Sep. 09, 2010, US20100227577 A1.

5) Zeong J, Hwang S, Choi W, **Park H**, "Apparatus and operating method of digital RF receiver in a wireless communication system," Publication date: Aug. 26, 2010, US20100215124 A1.

4) **Park H**, Yoon B, Lee J, Son M, Zeong J, "Phase matching band-pass filter using exponential function approximation," Publication date: Aug. 13, 2013, US8508292 B2.

3) **Park H**, Choi W, Zeong J, "Filtering apparatus and method using reference feedback circuit of wireless communication system," U.S. Filing date: Dec. 29, 2009, US20100167676 A1.

2) **Park H**, Zeong J, Choi W, "High-Q RF band-pass filter structure with reference feedback circuit using band-limited signal," Korea Filing date: Dec. 30, 2008, Korea Patent Application P2008-0136434.

1) Choi W, **Park H**, Zeong J, "Digital to RF converter using RFDAC with embedded image frequency rejection," Korea Filing date: Nov. 26, 2008, Korea Patent Application P2008-0117856.

Experimental Protocols (Human)

10) Ravichandran R and **Park H**, "An electrotactile-visual mapping to improve the accuracy of visual-proprioceptive mapping," IRB2020-0481D (Approved; 04/22/2020 - 04/21/2022).

9) Dollahon D and **Park H**, "Evaluation of Grip Force Changes Due to Interaction Gain Modulation in Both Feedforward and Feedback Modalities," IRB2019-1434D (Approved; 06/03/2020 - 06/02/2022).

8) Manoharan S and **Park H**, "Investigation of Indirect Evidence of Central Pattern Generator for Rhythmic Finger Tapping," IRB2020-0803D (Approved; 10/07/2020 - 10/06/2021).

7) Jiang B, Kim J, **Park H**, A tracer-free intraoral device for tongue operated multifunctional assistive technology using real-time closed-loop artificial sensory feedback to the tongue" IRB2019-0895D (Approved; 09/23/2019 – 09/22/2021).

6) Zhao A, Kim J, **Park H**, "Study on the origin of the forehead proximity sensation in human," IRB2018-1497D (Approved; 04/11/2019 - 04/10/2021).

5) Vembu Srinivasan R and **Park H**, "Static and Dynamic Balance Training with Augmented Somatosensory Feedback," IRB2018-1511F (Approved; 03/06/2019 - 04/06/2022).

4) Manoharan S and **Park H**, "Device for Investigation of Body Schema Extension of Non-Corporeal Objects for Peripheral Nervous System," IRB2018-0893D (Approved; 02/06/2019 - 01/20/2021).

3) Rangwani R and **Park H**, "Surface EMG robotic arm control system with vibration induced proprioceptive and kinesthetic feedback," IRB2018-1583D (Approved; 02/06/2020 - 02/08/2022).

2) Biyani S, Jing Y, **Park H**, "A closed-loop intraoral electrical stimulation to control muscle activation patterns fo swallowing," IRB2017-0781F (Approved; 06/06/2018 - 06/05/2020).

1) Jiang B, Jing Y, Kim J, and **Park H**, "A wearable intraoral and neckband system for speech therapy using real-time closed-loop artificial sensory feedback to the tongue and vocal folds," IRB2018-0912F (Approved; 01/09/2019 - 01/05/2022).

Experimental Protocols (Animal)

3) Aceves M, **Park H**, Dulin J, "Cellular and Molecular Approaches for Repairing the Injured Spinal Cord," IACUC 2018-0156 (Approved; 06/12/2019 - 06/11/2021).

2) Shon A, **Park H**, Geoffroy C, "Closed-loop electrical stimulation to treat the neurogenic bowel dysfunction, using a rodent model," IACUC 2018-0400 (Approved; 04/04/2019 - 04/03/2022).

1) Brakel K, Metzger C, Terminel M, Bloomfield S, **Park H**, Hook M, "Peripheral-nerve electrical stimulation to prevent bone mineral density loss in the lower extremity after spinal cord injury," IACUC 2017-0443 (Approved; 02/26/2018 - 02/25/2021).

Grants

[Current support]

(Active-1/9)

Project/Proposal Title:	Dissecting Connectivity and Function of Transplanted Interneurons in the Injured Spinal Cord
Source of Support:	NIH
Investigators:	Jennifer Dulin (PI), **Hangue Park (Co-I)**
Total Award Amount:	$1,872,495 ($93,624 for Park)
Project period:	01/01/2021 – 11/30/2025
Status:	Active

(Active-2/9)

Project/Proposal Title:	Promoting colonic peristalsis after chronic spinal cord injury with closed-loop electrical stimulation
Source of Support:	Paralyzed Veterans of America
Investigators:	Cedric Geoffroy (PI), **Hangue Park (Co-PI)**
Total Award Amount:	$150,000 ($56,795 for Park)
Project period:	01/01/2021 – 12/31/2023
Status:	Active
Effort (Person-months):	0.6 (year 1); 0.6 (year 2)

(Active-3/9)

Project/Proposal Title:	FW-HTF-RM: The Future of Teleoperation in Construction Workplaces
Source of Support:	NSF
Investigators:	Youngjib Ham (PI), **Hangue Park (Co-PI)**, Jeonghee Kim (Co-PI), Camille Peres (Co-PI), Mindy Bergman (Co-PI), Thomas Ferris (Co-I)
Total Award Amount:	$1,380,612 ($250,964 for Park)
Project period:	01/01/2021 – 12/31/2023
Status:	Active
Effort (Person-months):	1.0 (year 1); 1.0 (year 2); 1.0 (year 3)

(Active-4/9)

Project/Proposal Title:	Closed-loop peripheral sensory-driven motor augmentation to promote gait rehabilitation after spinal cord injury
Source of Support:	TIRR Foundation
Investigators:	**Hangue Park (PI)**, Michelle Hook (Co-I), James Grau (Co-I)
Total Award Amount:	$60,000 ($47,953 for Park)
Project period:	01/01/2021 – 12/31/2022
Status:	Active
Effort (Person-months):	0.36 (year 1); 0.36 (year 2)
Effort (Person-months):	0.5 (year 3); 0.5 (year 4)

(Active-5/9)

Project/Proposal Title:	Electroceuticals as AI-based Smart Therapies for Brain Disorders
Source of Support:	President's Excellence Fund (X-grant), Texas A&M University
Investigators:	Samba Reddy (PI), P.R. Kumar (Co-PI), Roderic Pettigrew (Co-PI), Saurabh Biswas (Co-I), Beth Boudreau (Co-I), Satish Bukkapatnam (Co-I), Madhav Erraguntla (Co-I), Mansoor Khan (Co-I), Gerard Toussaint (Co-I), Jun Zou (Co-I), **Hangue Park (Co-I)**
Total Award Amount:	$1,000,000 ($72,210 for Park)
Project period:	09/01/2020 – 08/31/2023
Status:	Active

(Active-6/9)

Project/Proposal Title:	Battery-free intraoral device for assistive technology and therapeutic applications

Source of Support: President's Excellence Fund (T3), Texas A&M University
Investigators: **Hangue Park (PI)**, Jeonghee Kim (Co-PI), David Wright (Co-PI)
Total Award Amount: $30,000 ($10,000 for Park)
Project period: 01/01/2021 – 12/31/2022
Status: Active

(Active-7/9)
Project/Proposal Title: Promoting colonic peristalsis after spinal cord injury with closed-loop electrical stimulation
Source of Support: TIRR Foundation
Investigators: Cedric Geoffroy (PI), **Hangue Park (Co-PI)**
Total Award Amount: $200,000 ($73,166 for Park)
Project period: 06/01/2020 – 05/31/2022
Status: Active
Effort (Person-months): 0.6 (year 1); 0.6 (year 2)

(Active-8/9)
Project/Proposal Title: Patterned augmentation of tactile feedback from the foot to promote locomotor recovery after spinal cord injury (phase II)
Source of Support: Morton Cure Paralysis Fund
Investigators: **Hangue Park (PI)**, Michelle Hook (Co-I)
Total Award Amount: $30,000 ($30,000 for Park)
Project period: 03/01/2022 – 02/28/2023
Status: Active

(Active-9/9)
Project/Proposal Title: Promoting colonic peristalsis after spinal cord injury with closed-loop electrical stimulation and deep reinforcement learning
Source of Support: Craig Neilsen Foundation
Investigators: **Hangue Park (PI)**, Cedric Geoffroy (Co-I), Byung-Jun Yoon (Co-I)
Total Award Amount: $400,000
Project period: 07/31/2022 – 07/30/2024
Status: Active

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[Completed support]

(Completed-1/8)
Project/Proposal Title: Proprioceptive augmentation using proximity feedback via transcutaneous electrical stimulation, for rehabilitation of elbow joint movement after proprioceptive loss.
Source of Support: College of Education & Human Development, Texas A&M University
Investigators: **Hangue Park (PI)**, Yuming Lei (Co-I)
Total Award Amount: $30,000 ($30,000 for Park)
Project period: 01/01/2020 – 12/31/2021
Status: Active

(Completed-2/8)
Project/Proposal Title: Plantar tactile augmentation to improve plantar pressure distribution and lateral postural/dynamic balance of diabetic patients, using transcutaneous electrical stimulation.
Source of Support: College of Education & Human Development, Texas A&M University
Investigators: **Hangue Park (PI)**, Marielle Engelen (Co-I)
Total Award Amount: $49,556 ($49,556 for Park)
Project period: 01/01/2019 – 12/31/2021
Status: Active

(Completed-3/8)
Project/Proposal Title: Wearable Intraoral Neuromodulation System (WINS)
Source of Support: National Science Foundation (NSF) Innovation Corps (I-Corps™) program
Investigators: **Hangue Park (PI)**
Total Award Amount: $50,000 ($50,000 for Park)
Date submitted: 10/17/19
Project period: 02/01/2020 – 12/31/2021
Status: Active

(Completed-4/8)
Project/Proposal Title: Intuitive non-invasive sensory augmentation with neural-friendly code, for rehabilitation of finger grasp after incomplete spinal cord injury (SCI) or stroke
Source of Support: TIRR foundation
Investigators: **Hangue Park (PI)**
Total Award Amount: $25,000 ($25,000 for Park)
Project period: 06/01/2020 – 11/31/2021
Status: Active

(Completed-5/8)
Project/Proposal Title: Patterned augmentation of tactile feedback from the foot to promote locomotor recovery after spinal cord injury (phase I)
Source of Support: Morton Cure Paralysis Fund
Investigators: **Hangue Park (PI)**, Michelle Hook (Co-I)
Total Award Amount: $30,000 ($30,000 for Park)
Project period: 06/01/2020 – 05/31/2021
Status: Completed

(Completed-6/8)
Project/Proposal Title: Multifunctional intraORal Assistive technology (MORA) to interface with Home Environment
Source of Support: United States Department of Veterans Affairs
Investigators: **Hangue Park (PI)**, Jeonghee Kim (Co-PI)
Total Award Amount: $200,000 ($162,166 for Park)
Project period: 04/01/2019 – 12/31/2020
Status: Completed
Effort (Person-months): 1.2 (year 1); 0.3 (year 2)

(Completed-7/8)
Project/Proposal Title: Integration of the Residual Limb with Prosthesis via Direct Skin-Bone-Peripheral Nerve Interface (Grant number: W81XWH-16-1-0791)
Source of Support: Department of Defense
Investigators: Mark Pitkin (PI), Boris Prilutsky (Co-PI), Grigory Raykhtsaum (Co-I), Charles Cassidy (Co-I), **Hangue Park (Co-I)**
Total Award Amount: $1,408,709 (N/A; material cost covered for Park)
Project period: 09/30/2016-08/31/2019
Status: Completed

(Completed-8/8)
Project/Proposal Title: A closed-loop intraoral electrical stimulation system to help people with a swallowing problem
Source of Support: Division of Research, Texas A&M University
Investigators: **Hangue Park (PI)**
Total Award Amount: $10,000 ($10,000 for Park)
Project period: 05/01/2018-04/30/2020
Status: Completed

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Professional Activities

- Associate Editor, IEEE Transactions on Circuits and Systems II **2022-present**
- Associate Editor, Frontiers in Surgery **2022-present**
- Co-chair, Social Media Committee of IEEE International Symposium on Circuits & Systems **2021-2022**
- Reviewer, IEEE Reviews in Biomedical Engineering **2021-present**
- Guest Editor, Frontiers in Neuroscience: Neuroprosthetics (ISSN 1662-4548) **2020-present**
- National Science Foundation (NSF) Review Panel 2020 **2020**
- External Reviewer, Midstream Research Program for Universities (MRP) under the Innovation and Technology in Hong Kong **2020**
- Editorial Board, Prosthesis (ISSN 2673-1592) **2019-present**
- Topic Editor, Electronics (ISSN 2079-9292): Special Issue on "Smart Electrical Circuits and Systems for Neural Interface" **2019-2021**
- Member, Dysphagia Research Society (DRS) **2019-present**
- Member, American Heart Association (AHA) **2019-present**
- Research Faculty, Texas A&M Spinal Cord Initiative (TAMSCI) **2018-present**
- Research Faculty, Texas Brain & Spine Institute (TBSI) **2018-present**
- Reviewer, Electromagnetic Biology and Medicine **2018-present**
- TIRR Foundation Scholar, The Institute for Rehabilitation and Research (TIRR) Foundation **2017-present**
- Research Faculty, Texas A&M Institute for Neuroscience (TAMIN) **2017-present**
- Reviewer, IEEE Solid-State Circuits Letters **2017-present**
- Reviewer, MDPI Micromachines/MDPI Electronics **2017-present**
- Reviewer, IEEE Transactions on Biomedical Engineering **2016-present**
- Officer and member, Association of Korean Neuroscientist (AKN) **2015-present**
- Member, Society for Neuroscience (SfN) **2015-present**
- Reviewer, IEEE Antenna and Propagation Letters **2014-present**
- Reviewer, IEEE Transactions on Biomedical Circuits and Systems **2014-present**
- Reviewer, IEEE Transactions on Microwave Theory and Techniques **2014-present**
- Review committee for the International Symposium on Low Power Electronics and Design **2013**
- Reviewer, Electromagnetic Biology and Medicine **2012-present**
- Member, IEEE Circuits and Systems Society **2012-present**
- Member, IEEE Engineering in Medicine and Biology Society **2012-present**

Invited Talk/Panel

- "Therapeutic peripheral sensory stimulation," as a co-chair and presenter of workshop at the 44th Annual IEEE EMBS 2022 Conference **Jul. 2022**
- "Neuro-electronics System and Sensorimotor Neurorehabilitation," 1-hour invited talk at Sungkyunkwan University (SKKU) Intelligent Precision Healthcare Convergence seminar **Mar. 2022**
- "Neuro-electronics System and Motor Neurorehabilitation," 1-hour invited talk at The University of Texas Medical Branch (UTMB) at Galveston **Jan. 2022**
- "Neuro-electronics system: introduction and its applications," 1-hour invited talk at THEIEIE workshop for medical and healthcare **Dec. 2021**
- "Electrotactile communication for human augmentation" as an invited speaker for Keynote speech at The 7th International Conference on Next Generation Computing (ICNGC) 2021 **Nov. 2021**
- "Neuro-electronics system: introduction and its applications," 1-hour invited talk at Hanyang University IT Colloquium seminar. **Oct. 2021**

- "Biomedical in EE Seminar Series at Korea Advanced Institute of Science and Technology (KAIST)," Panelist **Jul. 2021**
- "Closed-loop peripheral sensory augmentation and its effect on motor control," 1-hour invited talk at Daegu Gyeongbuk Institute of Science and Technology (DGIST) **Jul. 2021**
- "Neuro-electronics system: introduction and its applications," 4-day 1-hour short-term lectures at Pohang University of Science and Technology (Postech) **Jun. 2021**
- "Closed-loop peripheral sensory augmentation and its effect on motor control," 1-hour invited talk at Korea Advanced Institute of Science and Technology (KAIST) **Jun. 2021**
- "Proprioceptive modulation," 1-hour invited talk at Imperial College London Bioengineering **May 2021**
- "Closed-loop peripheral sensory augmentation and its effect on motor control," 1-hour invited talk at TIRR Memorial Hermann **Apr. 2021**
- "Closed-loop peripheral sensory augmentation and its effect on motor control," 1-hour invited talk at University of Chicago Bioengineering **Jan. 2021**
- "Closed-loop peripheral sensory augmentation and its effect on motor control," 1-hour invited talk at Sherly-Ryan Ability lab **Dec. 2020**
- "ONCO-Engineering Virtual Panel Series between TAMU and MD Anderson: Computer-Assisted Surgical Planning in Oncology," Panelist **Oct. 2020**
- "Closed-loop sensory augmentation and its effect on motor control," 1-hour invited talk at University of Houston Biomedical engineering **Oct. 2020**
- "Current Trends in Bioelectronic Systems to Interface with the Human Nervous System," as a chair and presenter of Mini-Symposium of 43rd Annual IEEE EMBS 2020 Conference **Jul. 2020**
- "Tongue-operated assistive technologies: current advances and future directions," 1.5-hour invited talk at 2019 HHS Quality in Long-Term Care Conference **Dec. 2018**
- "Integrated neuroprosthesis: help our body with communicating electronics," seminar series at Center for Translational Research in Aging and Longevity (CTRAL), Texas A&M University **Dec. 2018**
- "Trans-tibial Hindlimb Prosthesis w/ Bi-directional Neural Pathway," Mini-symposium at Annual Meeting of Society for Neuroscience (SfN) **Nov. 2018**
- "Neuroprostheses to promote communications between the nervous and musculoskeletal systems," Physiology Brownbag Seminars, School of Biological Science, Georgia Institute of Technology **Nov. 2018**
- "Integrated neuroprosthesis: help our body with communicating electronics," Analog & Mixed signal center (AMSC) seminar, Texas A&M University **Apr. 2018**
- "Integrated neuroprosthesis: help our body with communicating electronics," academic panel at Pharmaceutical & Biotechnology career panel series of Texas A&M University **Apr. 2018**
- "Integrated neuroprosthesis: help our body with communicating electronics," Texas A&M Institute for Neuroscience (TAMIN) seminar, Texas A&M University **Feb. 2018**
- "Integrated neuroprosthesis: help our body with communicating electronics," 1-hour talk at Korean Aggies Bio Association of Texas A&M University **Jan. 2018**
- "Integrated neuroprosthesis: help our body with communicating electronics," 1-hour talk at ECE Bio-Seminar of Texas A&M University **Sep. 2017**
- "Gait optimization with a closed-loop artificial sensory feedback," 1-hour talk at Center for Medical Innovation of Seoul National University Hospital (CMI-SNUH) **Oct. 2016**
- "Motor learning with artificial sensation," 1-hour talk at Daegu Gyeongbuk Institute of Science and Technology (DGIST) **Oct. 2016**
- "Wireless Intraoral System," 20-min talk at Emerging Technologies in CMOS (ETCMOS) **May 2016**
- "Tongue Drive System - its development and future," 1-hour talk at Korea Advanced Institute of Science and Technology (KAIST) **Dec. 2012**
- "Tongue-drive System: A Wireless and Wearable Assistive Technology," Georgia Tech Bio-Industry Symposium **Nov. 2012**
- "Tungo: Better Mobility: Harnessing the Power of the Tongue," 30-minute talk at Georgia Life Sciences Summit

2012 by Georgia Bio **Jul. 2012**

Current Students and Alumni

- PhD thesis student (Current) – 7
  - Ahnsei Shon, Bing Jiang, Stefan Manoharan, Devon Dollahon, Semyoung Oh, Junxiang Zheng, Kyungrak Choi
- MS thesis student (Current) – 1
  - Ratnadeep Pal
- Alumni – 9
  - Rachen Ravichandran (2021; MS), Raghav Hari Krishna (2021; MS), Rami Mooti (2020; MS), Derrick Knox (2020; MS), Beomhee Park (2020; MS), Kasra Ghadiri (2020; MS), Jacob Azbell, (2020; MS), Rohit Rangwani (2020; MS), Siddarth Biyani (2019; MS)

Service Activities for Students (Committee Chair or co-Chair)

- Committee chair, PhD degree, Semyoung Oh, Department of Electrical and Computer Engineering **2021-present**
- Committee chair, PhD degree, Junxiang Zheng, Department of Electrical and Computer Engineering **2021-present**
- Committee chair, PhD degree, Devon Dollahon, Department of Electrical and Computer Engineering **2020-present**
- Committee chair, PhD degree, Ziqi Zhao, Department of Electrical and Computer Engineering **2019-present**
- Committee chair, PhD degree, Bing Jiang, Department of Electrical and Computer Engineering **2019-present**
- Committee chair, PhD degree, Ahnsei Shon, Interdisciplinary Engineering (ITDE) **2018-present**
- Committee chair, PhD degree, Stefan Manoharan, Department of Electrical and Computer Engineering **2018-present**
- Committee chair, MS degree, Rachen Ravichandran, Department of Electrical and Computer Engineering **2019-2021**
- Committee co-chair, MS degree, Raghav Hari Krishna, Department of Computer Science & Engineering **2020-2021**
- Committee chair, MS degree, Derrick Knox, Department of Electrical and Computer Engineering **2018-2020**
- Committee chair, MS degree, Kasra Ghadiri, Department of Electrical and Computer Engineering **2018-2020**
- Committee chair, MS degree, Rami Mooti, Department of Electrical and Computer Engineering **2018-2020**
- Committee chair, MS degree, Beomhee Park, Department of Electrical and Computer Engineering **2018-2020**
- Committee chair, MS degree, Rohit Rangwani, Department of Electrical and Computer Engineering **2018-2020**
- Committee chair, MS degree, Jacob Azbell, Department of Electrical and Computer Engineering **2018-2020**
- Committee chair, MS degree, Siddarth Biyani, Department of Electrical and Computer Engineering **2017-2019**

Service Activities for Students (Committee Member)

- Committee member, MS degree, Jonathan Curneal, Engineering Technology and Industrial Distribution **2021-present**
- Committee member, MS degree, Ethan L. Vargas, Department of Electrical and Computer Engineering **2021-present**
- Committee member, PhD degree, Ryan J. Samuel, Department of Electrical and Computer Engineering **2021-present**
- Committee member, PhD degree, Yuwen Li, Department of Electrical and Computer Engineering **2020-present**
- Committee member, PhD degree, Sungjin Kim, Interdisciplinary Engineering (ITDE) **2020-present**
- Committee member, PhD degree, Jinghao Yang, Department of Electrical and Computer Engineering **2020-present**
- Committee member, PhD degree, Megan Makela, Department of Electrical and Computer Engineering **2020-present**
- Committee member, MS degree, Samy Priyanka, Department of Electrical and Computer Engineering **2020-present**
- Committee member, MS degree, Mamoon Masud, Department of Electrical and Computer Engineering **2020-present**
- Committee member, MS degree, Modupe Adesemoye, Department of Electrical and Computer Engineering **2019-present**
- Committee member, MS degree, Chih-Ying Lee, Department of Electrical and Computer Engineering **2019-present**

- Committee member, MS degree, Javed Ali, Department of Electrical and Computer Engineering **2019-present**
- Committee member, PhD degree, Ruida Liu, Department of Electrical and Computer Engineering **2018-present**
- Committee member, PhD degree, Shivanand Pattanshetti, Department of Mechanical Engineering **2018-present**
- Committee member, PhD degree, Rohith Karthikeyan, Department of Mechanical Engineering **2018-present**
- Committee member, PhD degree, Saber K. Hashemaba, Department of Electrical and Computer Engineering **2020-2021**
- Committee member, MS degree, Jaekwan K. Park, Department of Health and Kinesiology **2018-2020**
- Committee member, MS degree, Dennis Kim, Department of Electrical and Computer Engineering **2019**
- Committee member, MS degree, Taimoor Daud Khan, Department of Mechanical Engineering **2018-2019**
- Committee member, PhD degree, Mohammad Nazifi, Department of Mechanical Engineering **2017-2019**
- Committee member, PhD degree, Yitsen Pan, Department of Electrical and Computer Engineering **2017-2018**
- Committee member, MS degree, Kenny Chour, Department of Mechanical Engineering **2017**

Service Activities for Department, College, and University

- Institutional Review Board (IRB) Review Committee, Engineering Scientist Group **2021-present**
- Main advisor, Theta Tau XI GAMMA Chapter at Texas A&M University **2021-present**
- Graduate Studies Committee (GSC), Electrical and Computer Engineering, Texas A&M University **2020-present**
- Graduate Student Quality Evaluation Committee (GSQE), Electrical and Computer Engineering, Texas A&M University **2020-present**
- Representative of The Junior Engineering Faculty Advisory Council (JFAC), Electrical and Computer Engineering, Texas A&M University **2018-2021**
- Inquiry Committee for alleged plagiarism, Texas A&M University **2020**
- ECE Seminar & Distinguished Speaker Committee, Electrical and Computer Engineering, Texas A&M University **2019-2020**
- Grad Fee Ad-Hoc Committee, Electrical and Computer Engineering, Texas A&M University **2018-2020**
- ECE Faculty Recruitment & Hiring committee, Electrical and Computer Engineering, Texas A&M University **2018-2019**
- Spinal Cord Injury Search Committee, Texas A&M University **2017-2018**
- Undergraduate Program development Committee for Neuroscience major, Texas A&M University **2017-2018**

Volunteer Activities

- Volunteer work, Shepherd center for medical treatment, research, and rehabilitation **Sep. 2011**
- President, Basketball club, Georgia Tech Korean Student Association **Sep. 2010-Jul. 2013**
- President, Students' association, Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea **Aug. 2000-Jul. 2002**

VISA Status

United States Permanent Resident