GUGYEONG SUNG

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EDUCATION

Texas A&M University, College Station, Texas **Fall 2023 - Present**
Doctor of Philosophy
Mechanical Engineering
GPA: 4.0 / 4.0

University of Alabama, Tuscaloosa, Alabama **Graduated July 2021**
Master of Science
Mechanical Engineering
GPA: 3.71 / 4.0

University of Alabama, Tuscaloosa, Alabama **Graduated December 2019**
Bachelor of Science
Mechanical Engineering
GPA: 3.81 / 4.0
Magna Cum Laude

ACADEMICAL WORK EXPERIENCE

Teaching Assistant **Fall 2023 - Present**
Texas A&M University, College Station, TX
- MEEN 365 Dynamic Systems and Controls Lab (Spring 2023 & Fall 2024)
- MEEN 221 Statics and Particle Dynamics (Fall 2023 & Summer 2024)
- Instructed classes and assisted the professor with class management

Research Assistant **Summer 2024**
Texas A&M University, College Station, TX
- Selected for the graduate summer research grant program
- Researched TSV/TGV critical dimension metrology and Inspection

Research Engineer **2021 - 2023**
Yeungnam University, Gyeongsan, Republic of Korea
- Worked at the HRC Lab (Website: hrc.yu.ac.kr)
- Researched a force control method without physical force sensors
- Researched a gait strategy for people with paraplegia wearing powered exoskeletons
- Co-wrote a course textbook (Introduction to Wearable Robotics for People with Disabilities)

Teaching Assistant **Fall 2019**
University of Alabama, Tuscaloosa, AL
- ME 450 Dynamic Machine Components
- Assisted professor with class management

Research Assistant **Fall 2017 – Spring 2018**
University of Alabama, Tuscaloosa, AL
- Modeled rideable drones
- Researched additive manufacturing for magnetic materials

WORK EXPERIENCE

Technical Support **November 2023 - January 2024**
Consumer Electronics Show (CES), Las Vegas, NV
- Worked with IDeA OCEAN Inc.
- Assisted in real-time troubleshooting of hardware and software issues during demonstrations while engaging with industry professionals and clients to explain technical aspects and gather feedback for future development.

Marine Corps Officer **2012 - 2014**
Republic of Korea
- Served as a member of the Anti-Aircraft Artillery
- Helped keep nuclear power plants and ironworks safe from potential air strike threats

RESEARCH EXPERIENCE

Research Assistant **Fall 2023 – Present**
Texas A&M University, TX
- Designed a sensorless force tracking algorithm for a milling machine spindle
- Researched the methodology of the wafer defect inspection
- Researched TSV/TGV critical dimension metrology and inspection

Research Assistant **Spring 2019 – Fall 2020**
University of Alabama, Tuscaloosa, AL
- Modeled and manufactured a device for an upper torso rehabilitation

Research Assistant **Fall 2020 – Spring 2021**
University of Alabama, Tuscaloosa, AL
- Design and implementation of a rehabilitation device for lower limbs

PUBLICATION & CONFERENCE

Journal
- **G. Sung**, K. Kong, and J. Choi*, "What is the Proper Gait Pattern for People with Paraplegia Who Wear Powered Exoskeletons?: Re-examining gait patterns of existing powered exoskeletons," *IEEE Robotics and Automation Magazine*, 2023
- **G. Sung** and J. Choi*, "Improving Walking Autonomy of People with Paraplegia wearing Powered Exoskeletons," *IFAC-PapersOnLine*, *56*(2), 1127-1132, 2023

Conference

- **G. Sung** J. Lee, H. Chun, and C. Lee*, "3D Imaging Approach to TSV/TGV Critical Dimension Metrology and Inspection," ASME 20th *International Manufacturing Science and Engineering Conference (MSEC)*, 2025 (**Under Review**)
- J. Lee, **G. Sung**, H. Chun, and C. Lee*, "Particle Inspection by Single Camera-based 3D Stereoscopy," ASME *19th International Manufacturing Science and Engineering Conference (MSEC)*, 2024
- **G. Sung**, K. Kong, and J. Choi*, "What is the Proper Gait Pattern for People with Paraplegia Who Wear Powered Exoskeletons?: Re-examining gait patterns of existing powered exoskeletons," IEEE/RSJ *International Conference on Intelligent Robots and Systems (IROS)*, 2023
- **G. Sung** and J. Choi*, "Improving Walking Autonomy of People with Paraplegia wearing Powered Exoskeletons," *in proc. 22nd IFAC World Congress*, 2023
- **G. Sung**, S. Kim and J. Choi*, "A Quasi-Passive Pneumatic Spring System supporting Quadriceps Muscles," *in proc. 22nd IFAC World Congress*, 2023
- K. Yu, Y. Shin, **G. Sung**, and J. Choi*, "Force Control without Physical Force Sensors based on Virtual Wall Hypothesis for Development of High-Speed Winding Equipment," *37th Institute of Control Robotics and System (ICROS)*, 2022 (**Received Best Paper Award**)
- Y. Shin, K. Yu, **G. Sung**, and J. Choi*, "Force Control Algorithm for Maintaining Reaction Force without Physical Sensor based on Disturbance Observer," *17th Korea Robotics Society Annual Conference (KRoC)*, 2022 (**Best Paper Award Nominated**)

SKILLS

IT skills

- MATLAB/SIMULINK, LabVIEW, SolidWorks, Python, LaTex, Illustrator, and Micro Office

Language skills

- English (Fluent) & Korean (Native)

HONORS & INVOLVEMENT

- **Four-year guaranteed assistantship program** for Ph.D. Program from Texas A&M University
- Selected for **C.W. Crawford fellowship** for one year by the J. Mike Walker '66 Department of Mechanical Engineering in 2024
- Selected for the **2024 graduate summer research grant program** from the J. Mike Walker '66 Department of Mechanical Engineering
- **President's and Dean's List** from Fall 2017 to Fall 2019
- Recipient of **Award of Distinction Soldier** from the 1st Marine Division Leader
- Member of the Accelerated Master's Program (AMP) for good standing students
- Korean Student Association vice president – Texas A&M University
- Catia Club President - Yeungnam University Mechanical Engineering Department
- Daegu & GyeongBuk Province Representative in the National Robotic Competition in 2006
- National Robotic Competition Championship Representative in Republic of Korea in 2005