Min-Geun Park

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EDUCATION

MS Mechanical Engineering | **Atlanta, GA** May 2024
Georgia Institute of Technology
- GPA: 4.00 / 4.00

BS Mechanical Engineering | **Atlanta, GA** May 2023
Georgia Institute of Technology
- GPA: 3.93 / 4.00
- Minor: Computing & Intelligence

TECHNICAL SKILLS

- **Engineering Software**: SolidWorks, MATLAB, Simulink, Ansys, AutoCAD
- **Fabrication**: 3D Printing, Laser Cutting, Soldering, Hand & Power Tools
- **Programming**: Python, C/C++, Java, JavaScript
- **Frameworks**: Pytorch, Tensorflow, React, ReactNative, Node.js

PROFESSIONAL EXPERIENCE

Research Engineer Intern Jun 2023 - Aug 2023
Samsung Electronics - Mechatronics R&D Center | Hwasung, Korea
Project: *"Mobile Robot Arm Auto Calibration"*
- Evaluated the repeatability of a KUKA robot arm in compliance with ISO 9283 standards, using the Robot Operating System (ROS) and a Leica laser tracker for accurate measurements and detailed analysis.

Research Engineer Intern Jun 2022 - Aug 2022
Samsung Electronics - Global Technology Research Center | Suwon, Korea
Project: *"Anomaly Classification"*
- Developed a TensorFlow-based anomaly classification model for image data with 92% top-1 accuracy.
- Conducted a deep learning seminar for team members aiming to implement AI in their research, focusing on fundamental concepts, training methodologies, and troubleshooting strategies.

RESEARCH EXPERIENCE

Graduate Research Assistant Aug 2023 – Present
Supervisor: Prof. Kok-Meng Lee | Mentor: Wenjing Li
Research Topic: *"Development of a Magnetic Leadscrew"*
- Refining the components of the Magnetic Leadscrew (ML) to enhance system functionality, enabling its use in Series Elastic Actuators (SEAs).
- Conducting experiments to validate theoretically simulated models and estimate the system parameters.
- Developing a control system for the ML to achieve precise position and force control, utilizing Arduino.

Undergraduate Research Assistant Aug 2021 - Dec 2022
Supervisor: Prof. Frank L. Hammond III | Mentor: Dr. Elizabeth Fox
Research Topic: *"Development of Underactuated Gripper Using Controllable Stiffness Joints"*
- Developed a control system to adjust air pressure in chambers within a joint, controlling stiffness.
- Developed a test bed to analyze gripper-object contact, examining how joint stiffness impacts dexterity.
- Led a team of three students, managing project coordination, task delegation, and performance optimization to efficiently achieve project objectives.

Research Assistant Sep 2020 - Mar 2021
Supervisor: Prof. Wan Kyun Chung | Mentor: Dr. Donghyeon Lee
Research Topic: *"Multisensory Anomaly Detection for Mobile Robot in Smart Factories using Spatiotemporal Context Extraction"*
- Developed an anomaly detection system using RANSAC-Flow and f-AnoGAN algorithms, analyzing spatiotemporal context in thermal videos collected by a mobile surveillance robot, implemented with PyTorch.

PROJECTS

Simulation and Control of an Inverted Triple Pendulum Using Simulink May 2024 - Present

- Developing and simulating various controllers for an inverted triple pendulum using Simulink. Implementing both linear and nonlinear control strategies.
- For detailed information, please visit my personal webpage

Finite Element Analysis for Robot Arm Optimization Jan 2024 - May 2024

- Performed Finite Element Analysis (FEA) to optimize a robotic arm's design for reduced weight and enhanced durability, focusing on stress distribution and fatigue resistance.
- Developed and analyzed simulations to guide design enhancements and ensure mechanical reliability.

Adaptive Cornhole for People with Spinal Cord Injuries Jan 2023 - May 2023

- Designed an ergonomic shovel-shaped assistant tool, emphasizing comfort and ease of use. Utilized iterative prototyping and incorporated user feedback and ergonomic evaluations to optimize functionality.
- Optimized material selection for the adaptive corn hole tool to balance weight and strength, enhancing usability for individuals with spinal cord injuries. Utilized FEA for structural integrity assessments.

TEACHING EXPERIENCE

Graduate Teaching Assistant Aug 2023 - May 2024

Georgia Institute of Technology | Atlanta, GA

Course: ME4452 - Control Dynamic Systems

Topics: Modeling in the Laplace domain, Time response analysis, Stability analysis, Root-locus analysis and design, Frequency domain analysis and design, State-space design.

- Conducting 2-hour weekly office hours and delivered comprehensive review lectures, assisting over 30 students in grasping complex concepts in control systems engineering.
- Received a 4.54/5 average in TA evaluations, with 100% of students endorsing me for future courses.

CONFERENCE PAPERS

C1: W. Li, K.-M. Lee*, **M.-G. Park**, R. Huang and M. Li, "Magnetic Stiffness of Soft Continuous Permanent Magnet and its Parametric Effects on a Magnetic Series Elastic Actuator Control System", *IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM),* 7, 2024

PROFESSIONAL MEMBERSHIPS

- Georgia Tech chapter of The American Society of Mechanical Engineers 2023 – Present
- Institute of Electrical and Electronics Engineers (IEEE) - Student Member 2024 – Present

OUTREACH PROGRAM & PROFESSIONAL DEVELOPMENT

Volunteer May 2024

STEM Saturday, Georgia Institute of Technology

- Facilitated workshops where students built and tested model cars, applying the concepts of aerodynamics, energy conservation, and potential energy in a practical setting.

Volunteer March 2024

Atlanta Science Festival, Georgia Institute of Technology

- Prepared educational materials and facilitated hands-on workshops at the event, helping children build artificial hands and demonstrating a real robotic hand.

Math tutor May 2015 – Sep 2016

Rural Education Support Initiative, ROK Army Intelligence School

- Instructed students in a rural area with limited educational resources, teaching Algebra and Pre-Calculus. Focused on developing the curriculum and implementing individualized learning strategies to enhance mathematical understanding and problem-solving skills.

DIVERSITY EQUITY & INCLUSION

Exchange Student Assisting Program, Sungkyunkwan University Jan 2017 – Jul 2017

- Facilitated cultural adaptation and integration for international students in Korea by leading cultural exchange programs, enhancing cross-cultural understanding and fostering a supportive international community.