

CONTACTS

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EDUCATION

University of Texas at Austin, Austin, TX, USA

PhD in Mechanical Engineering, Expected to Graduate in 2027

Northwestern University, Evanston, IL, USA

Master of Science in Robotics, December 2021

Saint Louis University, St. Louis, MO, USA

Bachelor of Science in Mechanical Engineering, May 2020

WORK

Robot Mechatronics Intern

Agility Robotics | Salem, OR | 06/2025 - 09/2025

- Built a **tendon-driven finger** prototype for Digit and a test bed for evaluating cable transmission properties, including tension propagation and phase lag under cyclic loading.
- Developed a frequency-domain **system identification** framework to characterize cable transmissibility, linearity, and dynamic stiffness, establishing design metrics for **cable-driven mechanisms**.

Graduate Research Assistant

UT Austin & Sony Group Corporation | Austin, TX & Tokyo, Japan | 08/2023 - Current

- Designed and fabricated **dexterous robotic hands** with anthropomorphic fingertips for sub-millimeter precision in small-part manipulation.
- Developed a **whole-body teleoperation** framework for a 7-DOF manipulator and 8-DOF hand, utilizing **hybrid position/force control** to manage high-DOF multi-kinematic-chain redundancy.
- Architected a **shared-control** scheme for dexterous **in-hand manipulation** with **tactile sensors**, stabilizing multi-contact interaction while reducing computational overhead and teleoperator effort.

Research Intern

HQ Tech | Daejeon, South Korea | 05/2017 - 08/2017

- Developed vision-based quadcopter **UAV control** for reservoir flow measurement.

RESEARCH

Morphological Design of Contact Interfaces for Dexterous Manipulation

Research direction: designing contact-interface morphology to shape local contact mechanics, tactile sensitivity, and controllability in dexterous manipulation.

- Rigid-soft fingertip design with fingernails and compliant pulp for edge manipulation, grasp stability, and force-transparent interaction.
- Contact-mechanics-informed design principles linking fingertip morphology, tactile sensitivity, and dexterous manipulation performance.
- Shared-control and learning-based control strategies for stabilizing multi-contact in-hand manipulation.

Humanoid Upper-Body Design for Whole-Body Manipulation

Research direction: designing humanoid wrists, forearms, arms, and upper-body structures as sensing-rich, mechanically intelligent platforms for whole-body manipulation.

- Wrist and forearm mechanism design with optimized joint axes, compact transmission, and contact-aware morphology.
- Mechanism optimization and control co-design to reduce joint reaction forces, actuator effort, and unsafe contact loads.
- Whole-body sensing-enabled upper-body architectures for physical transparency, teleoperation, and contact-rich manipulation.

PUBLICATIONS	<p>DH. Kang, A. Kim, M. Seo, K. Yokoyama, T. Narita, and L. Sentis, "PLATO Hand: Shaping Contact Behavior with Fingernails for Precise Manipulation," accepted to <i>IEEE Robotics and Automation Letters (RA-L)</i>, 2026</p> <p>A. Kim, DH. Kang, M. Helwig, M. Seo, K. Yokoyama, T. Narita, and L. Sentis, "ARISTO Hand: Sensing-Driven Distal Hyperextension for Fine-Grained Manipulation," under review, 2026</p> <p>M. Kojouharov, DH. Kang, D. Rowland, R. Mykhailyshyn, L. Sentis, and A. Majewicz Fey, "Soft Vortex Gripper for Dexterous Manipulation using Hand-Like Robots," to appear in <i>IEEE International Conference on Robotics and Automation (ICRA)</i>, 2026</p> <p>SH. Bang, C. Gonzalez, G. Moore, DH. Kang, M. Seo, R. Gupta, and L. Sentis, "RPC: A Modular Framework for Robot Planning, Control, and Deployment," <i>IEEE International Symposium on System Integration (SII)</i>, 2025</p> <p>C. Gonzalez, S. Lee, F. Montano, S. Ortega, DH. Kang, M. Jaiswal, J. Jiao, and L. Sentis, "Design of a Person-Carrying Robot for Contact Compliant Navigation," <i>Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference</i>, 2023</p>								
TECHNICAL SKILLS	<p>Programming: C, C++, Python, MATLAB</p> <p>Mechanical Design: Creo, Onshape, SolidWorks, Ansys</p> <p>Robot Dynamics & Control: mechanism optimization, whole-body control, learning-based control</p> <p>Simulation: MuJoCo, Drake, Isaac Sim/Lab</p> <p>Embedded Robotics: FreeRTOS, STM32CubeIDE, CAN, EtherCAT</p>								
TEACHING EXPERIENCE	<p>Mechatronics Lab (ME 140L) TA <i>University of Texas at Austin 08/2022 - 12/2022</i></p> <p>Mechanical Engineering Lab (MENG 3001) TA <i>Saint Louis University 01/2020 - 05/2020</i></p> <p>Academic Tutor <i>Firm Foundation Tutoring Program 09/2016 - 03/2020</i></p> <ul style="list-style-type: none"> • Developed course syllabi, study guides, assessments, and supplemental documents for students in grades 4 to 9. • Taught Physical Science, Algebra, Writing Composition, and Reading Literature. 								
HONORS AND AWARDS	<p>Grand Challenges Scholar, National Academy of Engineering, 2020</p> <p>Parks College Innovation Challenge 1st Place, Saint Louis University, 2018</p> <p>Dean's List, Saint Louis University, 2018</p>								
RELEVANT COURSEWORK	<table border="0"> <tr> <td>Robotic Manipulation</td> <td>Embedded Systems in Robotics</td> </tr> <tr> <td>Sensing, Navigation, and ML</td> <td>Design and Control of Humanoid Robots</td> </tr> <tr> <td>Advanced Mechatronics</td> <td>Sensory Acquisition</td> </tr> <tr> <td>Brain, Body, and Robotics</td> <td>Haptics and Teleoperated Systems</td> </tr> </table>	Robotic Manipulation	Embedded Systems in Robotics	Sensing, Navigation, and ML	Design and Control of Humanoid Robots	Advanced Mechatronics	Sensory Acquisition	Brain, Body, and Robotics	Haptics and Teleoperated Systems
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LANGUAGE SKILLS	<p>English: Native</p> <p>Korean: Native</p>								