Dong Ho Kang

dokkev.github.io

CONTACTS

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EDUCATION

University of Texas at Austin, Austin, TX, USA
PhD in Mechanical Engineering, Currently Enrolled

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

RESEARCH

Dexterous Manipulation with Compliant Robotic Manipulator and Hands
University of Texas at Austin | 08/2023 - current
- Designed and integrated embedded systems and hardware interface for multi-finger robotic hands with **FOC**, **CAN**, **ros2 cotnrol**.
- **Grasp generation** with contact geometry and manipulability optimization

Vision-based Human-in-the-loop Teleoperation and Shared Autonomy
University of Texas at Austin | 01/2023 - 09/2023
- Developed a shared autonomy algorithm for wall roller painting, integrating **Moveit** for a robotic manipulator and utilizing MediaPipe for **hand pose tracking** and **gesture recognition**
- Deployed the algorithm to a Hiwin industrial robot manipulator for exposure analysis of toxic paint in a controlled environment chamber

Person-Carrying Autonomous Robot for Contact Compliant Navigation
University of Texas at Austin | 09/2022 - 09/2023
- Integrated low-level base controller and torque sensor of a tri-wheel omnidirectional robot.
- Implemented navigation stack using **TEBLocalPlanner, MoveBase, SLAM Toolbox**

Whisker-based Tactile Sensing and Shape Classifier
Northwestern University | 03/2021 - 12/2021
- Simulated rat's active vibrotactile sensing over divergent object shapes with **C++** and **bullet3** library to estimate wrench data of whiskers in contact.
- Implemented and trained whisker-based **real-time shape classifiers** using **Tensorflow**.
- Developed a **reinforcement learning** model to optimize head orientation for symmetric and maximizing whisker-object contact.

Autonomous Fire Fighting Robot Arm
Northwestern University | 12/2020 - 08/2021
- Manipulated HDT Adroit robot arm to pick up and operate a fire extinguisher autonomously using **ROS** and **Moveit**
- Implemented sensing and localization of fire by combining **thermal imaging and depth imaging**

INTERNSHIP

Research Assistant Intern
HQ Tech | Daejeon, South Korea | 05/2017 - 08/2017
- Operated **UAVs** to **measure the flux and quality** of water in the reservoirs
- Presented water flux measuring UAV design at R&D Special Zone Technology Exposition at Daejeon Convention Center
- Assisted in the design and execution of **testing and analysis** of precise water gauges using **computer vision**

TECHNICAL SKILLS	**Programming Languages:** C, C++, Python, MATLAB/Simulink
	Robotics Frameworks: ROS, ROS 2, Moveit, URDF, Xacro, Pinocchio, ModernRobotics
	Simulation: Ignition Gazebo, Drake, PyBullet, Gazebo Classic, CoppeliaSim
	Embedded System: FreeRTOS, PIC32, ESP32, Arduino
	Computer Vision: OpenCV, Scikit-Image, Mediapipe, YOLO
	Machine Learning: Tensorflow, PyTorch, Scikit-learn
	CAD/FEA: Creo, Abaqus, Ansys, Solidworks, EAGLE PCB
	Other: Git, LaTeX, Ableton

TEACHING EXPERIENCE

Mechatronics Lab (ME 140L) TA
Unviersity of Texas at Austin | 08/2022 - 12/2022
Mechanical Engineering Lab (MENG 3001) TA
Saint Louis University | 01/2020 - 05/2020

Academic Tutor
Firm Foundation Tutoring Program | 09/2016 - 03/2020
- Worked on course syllabi, study guides, assessments, and other additional documents that assist students in the grades of 4 to 9 for their academic success
- Taught Physical Science, and Algebra, Writing composition (grammar), Reading literature

HONORS AND AWARDS

Grand Challenges Scholar, National Academy of Engineering, 2020

Parks College Innovation Challenge 1st Place, Saint Louis University, 2018

Dean's List, Saint Louis University, 2018

RELEVANT COURSEWORK

Robotic Manipulation	Embedded Systems in Robotics
Sensing, Navigation, and ML	Design and Control of Humanoid
Advanced Mechatronics	Sensory Acquisition
Brain, Body, and Robotics	Haptics and Teleoperated Systtems

LANGUAGE SKILLS

English: Native

Korean: Native