Dong Ho Kang **dokkev.github.io**

CONTACTS
E-Mail: dongho@utexas.edu *Cell Phone:* (314)-934-6288
Portfolio: dokkev.github.io *Github:* dokkev

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

Agile Control for Shared Interaction Strategy
University of Texas at Austin & Sony Corporation | 08/2023 - current
- Designed and prototyped quasi-direct driven 9-DOF robotic hands with **FOC**, **CAN**, **ros2 cotnrol**.
- Hierarchical **Whole-Body Control** of 7-DOF SEA robotic arm and 9-DOF hand for safe and robust HRI involving complex contacts
- Implemented teleoperation system of the robotic arm and hand with **haptic feedback**

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**
- **Sensor fusion** of Lidar, RGBD, and IMU with EKF for improved localization

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 **RL** 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: Gazebo, Drake, PyBullet, Issac Sim, 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 Sytstems

Language Skills

English: Native

Korean: Native