Chung Hee (John) Kim

CURRICULUM VITAE

CONTACT INFORMATION

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EDUCATION

Carnegie Mellon University — AUG 2021 – PRESENT
Ph.D. in Robotics (Advisor: Dr. George Kantor)

The Hong Kong University of Science and Technology — FEB 2018 – FEB 2020
M.Phil. in Electronic and Computer Engineering (Advisor: Dr. Jungwon Seo)

The Hong Kong University of Science and Technology — SEP 2012 – DEC 2017
B.Eng. in Mechanical Engineering (First Class Honors)
* Overseas Student Exchange Program: **Georgia Institute of Technology**

RESEARCH EXPERIENCE

Research Assistant — AUG 2021 – PRESENT
The Robotics Institute, Carnegie Mellon Univeristy, Pittsburgh PA
- Research focus: Intelligent manipulation and perception for agricultural robotics
- Developed an award-winning vision system for obtaining the 3D branching structure of tree canopies
- Applied graph neural networks to model the dynamic deformations of tree canopies, in addition to training robotic manipulator policies aimed at skillfully manipulating tree structures

Research Assistant — FEB 2018 – JUN 2020
Robotic Manipulation Lab, HKUST Robotics Institute, Hong Kong
- Research focus: Dexterous robotic manipulation
- Utilized the industrial robot arm to develop an award-winning novel manipulation technique that can readily be applied to assembly automation

Undergraduate Research Opportunities Program — JUN 2017 – DEC 2017
The Hong Kong University of Science and Technology
- Research focus: Autonomous underwater vehicles
- Successfully demonstrated a working prototype of an underwater robot featured in Robotics Day 2017

PROFESSIONAL EXPERIENCE

Engineer — AUG 2020 – JUL 2021
Hong Kong Applied Science and Technology Research Institute, Hong Kong
- Conducted research on customizing synthetic faces generated from generative adversarial networks
- Developed a web application for users to submit tasks to be executed on the GPU server

Robotics Engineer (Intern) — JUNE 2019 – AUG 2019
XYZ Robotics Inc., Shanghai, China
- Developed a Mini-ASRS (Automated Storage & Retrieval System) software package for calibration, robot trajectory planning and execution
- Received Outstanding Intern Award for contributing to optimizing company's Goods-to-Robot system

Sergeant — OCT 2014 – JUL 2016
First Army Battalion, 177th Army Brigade, Republic of Korea Army, South Korea
- Led a team of 8 members as a squad leader, educating and applying hands-on training for the team to succeed in operations and tasks
- Received Soldier of the Year Award from battalion commander for respectful leadership to soldiers

PUBLICATIONS AND PATENTS

[1] **C. H. Kim**, M. Lee, O. Kroemer, G. Kantor "Towards Robotic Tree Manipulation: Leveraging Graph Representations", *(Under review, ICRA 2024)*

[2] **C. H. Kim**, G. Kantor, "Occlusion Reasoning for Skeleton Extraction of Self-Occluded Tree Canopies", *International Conference on Robotics and Automation (ICRA)*, 2023

- *Outstanding Sensors and Perception Paper Award (ICRA 2023)*

[3] H. Freeman, E. Schneider, **C. H. Kim**, M. Lee, G. Kantor "3D Reconstruction-Based Seed Counting of Sorghum Panicles for Agricultural Inspection", *International Conference on Robotics and Automation (ICRA)*, 2023

[4] **C. H. Kim**, J. Seo, "System and Methods for Robotic Precision Placement and Insertion," *U.S. Patent No. 11,628,561*, 18 Apr 2023.

[5] **C. H. Kim**, K. H. Mak, J. Seo, "Planning for Dexterous Ungrasping: Secure Ungrasping through Dexterous Manipulation", *IEEE Robotics and Automation Letters*, 2022

[6] K. H. Mak, **C. H. Kim**, J. Seo, "Robust Ungrasping of High Aspect Ratio Objects Through Dexterous Manipulation", *IEEE Robotics and Automation Letters*, 2022

[7] Z. Tong, Y. H. Ng, **C. H. Kim**, T. He, J. Seo, "Dig-Grasping via Direct Quasistatic Interaction Using Asymmetric Fingers: An Approach to Effective Bin Picking", *IEEE Robotics and Automation Letters*, 2021

[8] Z. Tong, T. He, **C. H. Kim**, Y. Ng, Q. Xu, and J. Seo, "Picking Thin Objects by Tilt-and-Pivot Manipulation and Its Application to Bin Picking", *International Conference on Robotics and Automation (ICRA)*, 2020

[9] **C. H. Kim**, J. Seo, "Shallow-Depth Insertion: Peg in Shallow Hole through Robotic In-Hand Manipulation", *IEEE Robotics and Automation Letters*, 2019

- *Best Paper Award in Robot Manipulation (ICRA 2019)*

PRESENTATIONS

AIIRA Annual Review Oral and Poster Presentation, Ames, IA	JUL 2023
ICRA 2023 Oral and Poster Presentation, London	MAY 2023
ICRA 2022 Oral and Poster Presentation, Philadelphia, PA	MAY 2022
MLCAS 2022 Poster Presentation, Ames, IA	OCT 2022
ICRA 2019 Oral and Poster Presentation, Montreal, Canada	MAY 2019

TEACHING

Robot Localization and Mapping, Teaching Assistant — SEPT 2023 – DEC 2023
Carnegie Mellon University

Computer Vision, Teaching Assistant — JAN 2023 – MAY 2023
Carnegie Mellon University

Introduction to Electro-Robot Design, Teaching Assistant — SEPT 2018 – MAY 2019
The Hong Kong University of Science and Technology

HONORS AND AWARDS

ICRA 2023 Outstanding Sensors and Perception Paper Award	MAY 2023
ICRA 2022 RAS Travel Grant	MAY 2022
ICRA 2019 Best Paper Award in Robot Manipulation	MAY 2019
ICRA 2019 RAS Travel Grant	MAY 2019
University Grants Committee (UGC) Research Travel Grant	JAN 2019
HKUST Academic Achievement Medal (*top 1% of graduates*)	JUN 2017

GRADUATE COURSEWORKS

CMU 16-825	Learning for 3D Vision	SPRING 2023
CMU 16-711	Kinematics, Dynamics, and Control	SPRING 2023
CMU 16-740	AI for Manipulation	FALL 2022
CMU 10-715	Advanced Introduction to Machine Learning	FALL 2022
CMU 11-785	Introduction to Deep Learning	SPRING 2022
CMU 16-833	Robot Localization and Mapping	SPRING 2022
CMU 16-720	Computer Vision	FALL 2021

CMU 16-811	Math Fundamentals for Robotics	FALL 2021
HKUST ELEC5660	Introduction to Aerial Robotics	SPRING 2019
HKUST ELEC5640	Robotic Manipulation	FALL 2018
HKUST COMP5212	Machine Learning	FALL 2018
HKUST ELEC6910	Robot Perception and Learning	SPRING 2018
HKUST EESM5730	Modern Control Systems Design	SPRING 2018

COMPETENCES

Languages English (*native*), Korean (*native*), Mandarin Chinese (*conversational*)

Skills Python, MATLAB, PyTorch, ROS, git, SolidWorks, Adobe Photoshop & Illustrator, LaTeX

Hobbies Acoustic Guitar (*self-taught*), Tennis

Last update: November 28, 2023