Jeonghwan Kim

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Education

Georgia Institute of Technology 2023 (Starting Fall) –
PhD in Robotics

Georgia Institute of Technology 2022 – 2023 (Expected Summer)
MS in Mathematics

Georgia Institute of Technology 2021 – 2023 (Expected Summer)
MS in Electrical and Computer Engineering

Seoul National University 2014 – 2020
BS in Electrical and Computer Engineering *summa cum laude*

Research Experience

Fast Simulation of Quadruped Robot 2022 – 2023
Georgia Institute of Technology, advisor: Sehoon Ha *Atlanta, GA*
- Neural motion generation of quadruped robots trained from data generated by trajectory optimization

Quadruped Controller for Autonomous Driving Simulator 2022 – 2023
MORAI, Georgia Institute of Technology *Atlanta, GA*
- Leading a sponsored project, developed model predictive locomotion controller for deploying quadruped robot in autonomous driving simulator (Framework : Unity3D)

3D Visual Computing and Geometric Analysis Group 2019 – 2020
Seoul National University, Advisor: Young Min Kim *Seoul, Korea*
- Machine learning research on 3D data (voxel, pointcloud, mesh)
- Publication: ICLR2021, Eurographics Short 2021

Samsung Research Undergraduate Internship 2019
Robotic systems department, Samsung Research *Seoul, Korea*
- Developed task managing system and a tablet based controller for data collection of mobile manipulator (Framework : ROS2)

University of Tokyo Summer Internship (UTSIP) 2018
Graduate School of Frontier Sciences, University of Tokyo *Kashiwa, Japan*
- Wireless parallel computing on low-cost mobile environment
- Parallel stress analysis of layered PCB via Front-ISTR

Publications

ARMP: Autoregressive Motion Planning for Quadruped Locomotion and Navigation in Complex Indoor Environments
Jeonghwan Kim, Tianyu Li, Sehoon Ha
Submitted to IROS2023

Autorigging 3D Bipedal Characters in Arbitrary Poses
Jeonghwan Kim, Hyeontae Son, Jinseok Bae, Young Min Kim
European Association for Computer Graphics (Eurographics) short paper 2021

Learning to generate 3D shapes with Generative Cellular Automata
Dongsu Zhang, Changwoon Choi, **Jeonghwan Kim**, Young Min Kim
International Conference on Learning Representations (ICLR) 2021

Skill Sets

Python, PyBullet, PyTorch, (C++/C#, ROS, Raisim, IsaacGym, Unity3D, Vicon Mocap)

Teaching Experience

Computer Graphics (CS3451) Spring 2023
Graduate Teaching Assistant, Georgia Institute of Technology

Computer Animation (CS4496/7496) Fall 2022
Graduate Teaching Assistant, Georgia Institute of Technology

Awards, Honors, Scholarships

Academic Excellence Scholarship(Full-Funding) 2017–2017
Seoul National University

Kwanjeong Educational Foundation Scholarship 2018–2019
Kwanjeong Educational Foundation Scholarship Foundation

Graduate Research Assistant 2022
Georgia Institute of Technology

Graduate Teaching Assistant 2022 – 2023
Georgia Institute of Technology

Other Research Projects

Design and Control of Scalable Multi-object Magnetic Suspension System 2018
Undergraduate Research Project, Funded by Seoul National Universtiy

- Model 3DoF levitating magnetic ball with 2D plane of electro magnets on MATLAB/Simulink
- 3DoF position control of levitating object using reinforcement learning(DDPG)

Stabilizing Controllers with Polynomial Root Gradients 2019–2020

- Use of Polynomial Root Kernel(PRK) and Polynomial Root Gradients(PRG) to trained neural network to generate both discrete and continuous controllers satisfying root criterion stability.
- Successfully generate stabilizing controllers and parallel feed-forward compensator(PFC) along with unique application to Belgian chocolate problem

Performance of AI and reliability of XAI 2021

- Validate use of XAI techniques to medical data for low performing AI
- Discover relation between reliability of various XAI methods(SHapley Additive exPlanations, Permutation Feature Importance, etc.) and AI's performance based on diverse simulation datasets.

Implementation of PPO for Multi-Agent Path Finding with Dynamic Obstacles 2022

- Validate the performance of PPO algorithm for multi-agent path finding with dynamic obstacles in MAPPER environment