

## EDUCATION

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- **Seoul National University** Seoul, Korea  
*Bachelor - Mechanical Engineering* *March 2010 - Feb 2014*
- **Seoul National University** Seoul, Korea  
*Master - Mechanical Engineering - Advisor: Dongjun Lee* *March 2018 - Feb 2020*  
*Thesis: Multi-Contact Simulator and Reinforcement Learning for Screw Tightening Tasks*
- **Korea Advanced Institute of Science and Technology (KAIST)** Seoul, Korea  
*PhD student - AI Graduate School - Advisor: Beomjoon Kim* *Sep 2022 - Present*

## SKILLS SUMMARY

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- **Languages:** Python, C++, MATLAB
- **Frameworks:** TensorFlow, Keras, Jax, ROS, OpenGL, Pybullet, Open3D, OMPL, FCL
- **Tools:** SolidWorks, EasyEDA

## EXPERIENCE

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- **Samsung/Hanwha Techwin** Changwon, Korea  
*QA Engineer - Gas Turbine Engine Division* *May 2014 - Sep 2017*
- **Samsung Research** Seoul, Korea  
*AI Researcher - AI Methods Team* *Feb 2020 - June 2022*
  - **Data-driven Grasping:** Develop algorithm for grasping in a heavily cluttered environment.
  - **Sim-to-real Transfer:** Reduce sim-to-real gap through robot control and domain randomization.
  - **Planning:** Apply AlphaGo Zero to arrangement task.
  - **Data Efficient Reinforcement Learning Algorithm:** Develop data efficient RL algorithm for vision-based object manipulation.

## PROJECTS

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- **Manipulator Identification:** identification of physics parameters for Franka Emika Panda
- **Manipulator Controller Design:** impedance controller, admittance controller, compliance controller
- **Motor Driver Design And FOC Control:** PCB design, MCU programming, anticogging, FOC control

## PUBLICATIONS

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- **Data-driven Contact Clustering for Robot Simulation:** Myungsin Kim, Jaemin Yoon, Dongwon Son, and Dongjun Lee. ICRA. 2019. paper
- **Learnable Environment Model with Data Efficiency for MPC of Assembly Tasks:** Dongwon Son, Hyunsoo Yang, and Dongjun Lee. IROS Workshop LRPC. 2019. video paper
- **Sim-to-Real Transfer of Bolting Tasks with Tight Tolerance:** Dongwon Son, Hyunsoo Yang, and Dongjun Lee. IROS. 2020. video paper
- **Reinforcement Learning for Vision-based Object Manipulation with Non-parametric Policy and Action Primitives:** Dongwon Son, Myungsin Kim, Jaechol Sim, and Wonsik Shin. IROS. 2021. video paper
- **Grasping as Inference: Reactive Grasping in Heavily Cluttered Environment:** Dongwon Son. RA-L. 2022. video paper
- **Interaction-Based Grasp Metric for Improving Grasp Prediction Performance (under review):** Dongwon Son, Jaecheol Sim, Wonsik Shin, Jeongmin Choi, and Myungsin Kim. RA-L. 2022. paper

## RESEARCH INTERESTS

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- Manipulation (object manipulation, grasping, vision-based assembly, long-horizon manipulation)
- Computationally efficient simulator (physics engine, rendering)
- Sim-to-real transfer
- Structured network design for manipulation
- Composition between model-based approaches and data-driven methods
- Open-source cost efficient manipulator design