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# Sunho Kim

Website   
Google Scholar   
GitHub 

## EDUCATION

<b>Seoul National University</b> <i>B.S. in Mechanical Engineering (Major)</i> <i>B.S. in System Semiconductor Engineering for AI (Interdisciplinary Major)</i> <i>GPA: 3.94/4.3 (cumulative), 3.8/4.3 (major), 3.98/4.3 (interdisciplinary major)</i> <i>Degree Honors: Summa Cum Laude</i>	<b>Mar 2018 - Aug 2022</b>
<b>Sejong Science High School</b> <i>High school for gifted students in mathematics and science</i> <i>Early graduation</i>	<b>Mar 2016 - Feb 2018</b>

## HONORS AND AWARDS

<b>Deep Learning Hardware Design Competition 2022</b> <i>Polaris, Korea</i> <i>2nd Place out of 111 Teams, won \$2,000 (Nationwide Competition)</i>	<b>Feb 2022 - Jul 2022</b>
<b>Industrial Scholarship</b> <i>Samsung Electronics Device Solutions</i> <i>Full tuition support for undergraduate studies</i>	<b>Mar 2020 - Jun 2022</b>
<b>KCC Undergraduate Thesis Award 2022</b> <i>Korea Computer Congress 2022</i> <i>Participation Award</i>	<b>Jul 2022</b>
<b>X-Corps Project 2020</b> <i>Practical Problem Research Group, Seoul National University</i> <i>Excellence Prize, won \$1,000</i>	<b>Jul 2020 - Dec 2020</b>
<b>Academic Excellence Scholarship</b> <i>Seoul National University</i> <i>Tuition support for undergraduate studies</i>	<b>Aug 2018 - Jun 2021</b>

## WORK EXPERIENCE

<b>Software Engineering Intern</b> <i>RUBIS Lab. in Seoul National University</i> <ul style="list-style-type: none"><li>• Developed autonomous driving algorithms based on Autoware</li><li>• Participated in data collection for adolescent emotional AI tutors</li><li>• Conducted research on how to improve the overall response time of ROS (Robot Operating System)</li></ul>	<b>Jan 2022 - Sep 2022</b> <i>Seoul, Korea</i>
<b>Hardware Engineering Intern</b> <i>Samsung Electronics (System LSI)</i> <ul style="list-style-type: none"><li>• Analyzed transformer-based deep learning model and designed accelerator hardware specialized in language processing.</li></ul>	<b>Jul 2021 - Aug 2021</b> <i>Hwaseong, Gyeonggi-do, Korea</i>
<b>Autonomous Driving Intern</b> <i>DYROS Lab. in Seoul National University</i> <ul style="list-style-type: none"><li>• Participated in creating datasets for lane detection and traffic light detection.</li><li>• Designed path planning algorithms for vehicle parking.</li></ul>	<b>Jan 2020 - Feb 2020</b> <i>Seoul, Korea</i>

## PROJECT

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### Deep Learning Hardware Design Competition 2022

Feb 2022 - Jul 2022

*AI Accelerator Design Competition for Undergraduate Students*

- Designed an adder-tree-based computational unit tailored to Tiny-YOLO v3 model that computes convolutions in parallel and the datapath to minimize the buffer usage.
- Organized presentation for special session in [IEEE AICAS 2022](#).

### HMG Autonomous Driving Challenge 2021

Aug 2020 - Feb 2021

*Hyundai Motor's Autonomous Driving Competition for Undergraduate/Graduate Students*

- Developed software to perform missions in CarMaker simulation.
- Participated in developing object detection (modified version of YOLO v3), tracking (Kalman Filter) using lidar and camera, and a path planning algorithm (Optimal Frenet Planning). ([GitHub](#))

### K-Startup Maker Project 2020

Jul 2020 - Dec 2020

*Maker Project hosted by the Korean Government (K-Startup)*

- Developed a robot software that can drive autonomously with only remote cameras without attached sensors as a team leader. \$5,000 in support.
- Participated in developing driving area detection (U-Net) and robot position detection (DOPE). ([GitHub](#))

### X-Corps Project 2020

Jul 2020 - Dec 2020

*Undergraduate Project hosted by Seoul National University*

- The project is on the same subject as K-Startup Maker Project 2020. \$5,000 in support.

### International Student Car Competition 2020

Mar 2020 - Aug 2020

*Autonomous Driving Competition for International Students*

- Developed autonomous driving software, especially in real-time parking slot detection (modified version of YOLO v3), traffic light detection (YOLO v3), and lane detection (LaneNet) algorithm. ([GitHub](#), [YouTube](#))

### Autonomous Delivery Project

Jan 2020 - Feb 2020

*Autonomous Delivery Project conducted by [ARI Lab](#).*

- Participated in the initial phase of the project. ([YouTube](#))

### DYROS Robotics Boot Camp

Jan 2019

*[DYROS Lab](#). Bootcamp for ROS (Robot Operating System) and Linux*

## PUBLICATION (FIRST AUTHOR)

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- Sunho Kim, Hayeon Park and Chang-Gun Lee, **Optimizing the Response Time for ROS Tasks in Multi-Core Processors**, IEEE/ACM International Symposium on Distributed Simulation and Real-Time Applications, 2023
- Sunho Kim, Dongmin Shin and Chang-Gun Lee, **Autoware Controller Interface for Actual Vehicle Driving**, Korea Computer Congress, 2022 (Participation Award, [Google Scholar](#))

## SKILLS

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### Programming

Git, L<sup>A</sup>T<sub>E</sub>X, Matlab, Markdown, Python, C, C++

### Hardware Design

Verilog, Bluespec, ModelSim, Vivado, Cadence Virtuoso

### Communication

Korean (native), English (103/120 TOEFL)