# Cheol-Ho **Choi**

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## PROFESSIONAL APPOINTMENTS

| | | |
|---|---|---|
| 2023.01 – Present | SoC Design Engineer | Core H/W Team, Pangyo R&D Center, Hanwha Systems, Co., Ltd., Republic of Korea |

## EDUCATIONS

| | | |
|---|---|---|
| M.S. (2020 – 2022) | Electronic & Electrical Engineering | Kyungpook National University, Republic of Korea |
| B.S. (2013 – 2020) | Electronic Engineering | Yeungnam University, Republic of Korea |

## MILITARY SERVICE

| | |
|---|---|
| 2014 – 2016 | Republic of Korea Army |

## HONORS and AWARDS

### • NATIONAL BEST PAPER AWARDS

| | | |
|---|---|---|
| 2021 | Best Paper Award | KIPS Spring Conference |
| 2018 | Best Paper Award | KIEES Summer Conference |

### • INSTITUTE AWARDS

| | | |
|---|---|---|
| 2019 | Excellence Research Award | Korean Foundation of Women in Science, Engineering and Technology & Institution of Electronic and Information Engineers |

### • SCHOOL AWARDS

| | | |
|---|---|---|
| 2021 | Scholarship for Academic Excellence | Kyungpook National University ($4,200) |
| 2020 | Scholarship for Academic Excellence | Kyungpook National University ($2,153) |
| 2019 | Merit-based Scholarship | Yeungnam University ($2,446) |
| 2019 | Merit-based Scholarship | Yeungnam University ($1,500) |
| 2019 | Scholarship for Academic Excellence | Yeungnam University ($1,223) |
| 2017 | Scholarship for Academic Excellence | Yeungnam University ($1,223) |
| 2013 | Scholarship for Academic Excellence for Freshmen (within Top 10%) | Yeungnam University ($2,058) |

Updated: 09/07/2024

## RESEARCH PROJECT EXPERIENCES

*HSC: Hanwha Systems Company
*MOTIE: Ministry of Trade, Industry and Energy (Republic of Korea)
*NRF: National Research Foundation (Republic of Korea)

**HSC** **Title: Night Vision System Design using LWIR-based Thermal Camera Sensor**
Role: SoC Design Engineer (for Thermal Imaging Processor Design)
Year: 2023 – Present

**MOTIE** **Title: Research on System of Test Equipment for High-Speed Memory (CK 8GHz DQ 16Gbps)**
Role: Researcher (for Test Pattern Generation Algorithm Design)
Year: 2022

**NRF** **Title: Development for Public Safety Devices Considering Usability of On-site Police Officers**
Role: Researcher (for Machine Learning Processor Design)
Year: 2020 – 2022

**NRF** **Title: An Embedded System for Real–Time Context Awareness of Smart Cars**
Role: Researcher (for Stereo Vision Processor Design)
Year: 2020 – 2022

## CERTIFICATED PROGRAMS

| | | |
|---|---|---|
| 2023 | ISO26262:2018 Functional Safety Engineering Course: Automotive Foundation Level (FSE-AFL) | Det Norske Veritas (DNV) |
| 2022 | Deep-Learning Processing Unit Design and Implementation | IC Design Education Center (IDEC) |
| 2022 | HDL Code Generation and Verification using MATLAB | IC Design Education Center (IDEC) |
| 2022 | Automatically Code Generation Method for C and CUDA from MATLAB | IC Design Education Center (IDEC) |
| 2022 | Analog/Digital Integrated Circuit Theory and Design for Digital Circuit (RTL–to–GDSII) | IC Design Education Center (IDEC) |
| 2022 | Deep Learning Basic and Design | IC Design Education Center (IDEC) |
| 2022 | Cell-based Chip Design Flow for Samsung 28nm Fabrication | IC Design Education Center (IDEC) |
| 2020 | AMBA AXI and AXI-Stream Design and Verification | IC Design Education Center (IDEC) |

# ACADEMIC TEACHING EXPERIENCES

| | | |
|---|---|---|
| Spring, 2022 | SoC Design and Programming | Teaching Assistant (TA) |
| Spring, 2022 | Electronic Engineering Clinic I | Teaching Assistant (TA) |
| Fall, 2021 | Computer Architecture | Teaching Assistant (TA) |
| Spring, 2021 | SoC Design and Programming | Teaching Assistant (TA) |
| Spring, 2021 | Electronic Engineering Clinic I | Teaching Assistant (TA) |
| Fall, 2020 | Electronic Engineering Clinic II | Teaching Assistant (TA) |

# SPEAKER EXPERIENCES

| | | |
|---|---|---|
| May 2024 | AutoSens USA – InCabin Session<br>(**Title**: Innovative Approach to Thermal Imaging-Based CPD Systems) | [Agenda] [Detail Information] |
| May 2024 | R&D Mentoring Program (for Graduate Student) | |
| Oct. 2023 | R&D Mentoring Program (for Graduate Student) | |
| May 2023 | R&D Mentoring Program (for Graduate Student) | |

# PUBLICATIONS

***: Corresponding author**

## • JOURNALS

[J1] **Contrast Enhancement Method using Region-based Dynamic Clipping Technique for LWIR-based Thermal Camera of Night Vision Systems**
**Cheol–Ho Choi***, Joonhwan Han, Jeongwoo Cha, Hyunmin Choi, Jungho Shin, Taehyun Kim, Hyun Woo Oh
*Sensors*, Vol. 24, No. 12 (Jun 2024)
[SCIE] [Link]

[J2] **Cell-Based Refinement Processor Utilizing Disparity Characteristics of Road Environment for SGM-based Stereo Vision Systems**
**Cheol–Ho Choi***, Hyun Woo Oh, Joonhwan Han, Jungho Shin
*IEEE Access*, Vol. 11 (Dec. 2023)
[SCIE] [Link]

[J3] **Face Detection Using Haar Cascade Classifiers Based on Vertical Component Calibration**
**Cheol–Ho Choi***, Junghwan Kim, Jongkil Hyun, Younghyeon Kim, Byungin Moon
*Human-centric Computing and Information Sciences (HCIS)*, Vol. 12, No. 11 (Mar. 2022)
[SCIE] [Link]

[J4] **Filtering-based Method and Hardware Architecture for Drivable Area Detection in Road Environment Including Vegetation**
Younghyeon Kim, Jiseok Ha, **Cheol–Ho Choi**, Byungin Moon
*KIPS Transactions on Software and Data Engineering (KTSDE)*, (Jan. 2022)
[KCI (Korean Citation Index)] [Link]

[J5] **Heartbeat Detection using a Doppler Radar Sensor based on the Scaling Function of Wavelet Transform**
**Cheol–Ho Choi**, Jae–Hyun Park, Ha–Neul Lee, Jong–Ryul Yang
*Microwave and Optical Technology Letters (MOTL)*, Vol. 61, No. 7 (Jul. 2019)
[SCIE] [Link]

## • CONFERENCES

[C1] **Infrared Thermal Imaging for Embedded Child Presence Detection System: Feasibility and Performance Evaluation**
**Cheol-Ho Choi***, Seongtaek Hong, Eun Jin Jeong, Joonhwan Han
*IEEE International Conference on Consumer Electronics-Asia (ICCE-Asia)*
Danang, Vietnam (Nov. 2024)

[C2] **Algorithm for LWIR Thermal Imaging Camera with Minimal Mechanical Shutter Utilization**
Taehyun Kim, Joonhwan Han, Jeongwoo Cha, Hyunmin Choi, Jungho Shin, Hyun Woo Oh, **Cheol-Ho Choi**, Eunchong Kim
*IEEE International Conference on Consumer Electronics-Asia (ICCE-Asia)*
Danang, Vietnam (Nov. 2024)

[C3] **Improved Contrast Enhancement Algorithm for Night Vision Systems using Thermal Camera**
**Cheol–Ho Choi***, Jeongwoo Cha, Joonhwan Han, Hyunmin Choi, Jungho Shin
*International SoC Design Conference (ISOCC)*
Sapporo, Japan (Aug. 2024)
[Poster] [Link] [Program Page]

[C4] **A Compact Real-Time Thermal Imaging System Based on Heterogeneous System-on-Chip**
Hyun Woo Oh, **Cheol–Ho Choi**, Jeongwoo Cha, Hyunmin Choi, Jungho Shin, Joonhwan Han
*IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)*
Sokcho, Republic of Korea (Aug. 2024)
[Oral Presentation] [Link] [Program Page]

[C5] **Fast Object Detection Algorithm using Edge-based Operation Skip Scheme with Viola-Jones Method**
**Cheol–Ho Choi***, Joonhwan Han, Jeongwoo Cha, Jungho Shin, Hyun Woo Oh
*IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS)*
Abu Dhabi, UAE (Apr. 2024)
[Lecture Presentation] [Link] [Program Page]

[C6] **Disparity Refinement Processor Architecture utilizing Horizontal and Vertical Characteristics for Stereo Vision System**
**Cheol–Ho Choi***, Hyun Woo Oh
*Euromicro Conference on Digital System Design (DSD)*
Golem, Albania (Sep. 2023)
[Long Presentation] [Link] [Program Page] [Slide]

[C7] **An SoC FPGA-based Integrated Real-Time Image Processor for Uncooled Infrared Focal Plane Array**
Hyun Woo Oh, **Cheol–Ho Choi**, Jeongwoo Cha, Hyunmin Choi, Joonhwan Han, Jungho Shin
*Euromicro Conference on Digital System Design (DSD)*
Golem, Albania (Sep. 2023)
[Long Presentation] [Link] [Program Page]

[C8] **Haar Filter Hardware Architecture for the Accuracy Improvement of Stereo Vision Systems**
**Cheol–Ho Choi**, Younghyeon Kim, Jiseok Ha, Byungin Moon
*International SoC Design Conference (ISOCC)*
Jeju, Republic of Korea (Oct. 2021)
[Poster] [Link] [Program Page]

[C9] **Hardware Architecture of a Haar Classifier Based Face Detection System using Skip Scheme**
Jongkil Hyun, Junghwan Kim, **Cheol–Ho Choi**, Byungin Moon
*IEEE International Symposium on Circuits and Systems (ISCAS)*
Daegu, Republic of Korea, (May 2021)
[Oral Presentation] [Link]