# Chang-Hyeon **An**

DEEP LEARNING ENGINEER · COMPUTER VISION & MEDICAL IMAGE PROCESSING

*Intelligent Computer Vision Software Laboratory (ICVSLab.), Department of Electronic Engineering, Yeungnam University 301-1 E22, 280 Daehakro, Gyeongsan, Gyeongbuk, 38541 Korea*

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*"The only person you should try to be better than is the person you were yesterday."*

## Education

**Yeungnam University**                                                                                      *Gyeongsan, S.Korea*
M.S. IN ELECTRONIC ENGINEERING                                                                              *Mar. 2022 - Present*
- Research Areas: Image generation, medical image processing (X-ray image), and semiconductor process predicting.
- Advisor: Prof. Hyun-Chul Choi

**Yeungnam University**                                                                                      *Gyeongsan, S.Korea*
B.S. IN ELECTRONIC ENGINEERING                                                                              *Mar. 2016 - Feb. 2022*
- Cumulative GPA: 4.08 / 4.5 (Major: 4.21 / 4.5)

## Skills

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|---|---|
| **Programming** | Python, PyTorch, Flask, Matlab |
| **Tools** | LaTeX, Notion, Github, WandB |
| **Languages** | Korean, English (OPIc: IH-Intermediate High) |

## Projects

**Vertebral landmark detection on X-ray image**                                                                       *M.S.*
MEDICAL IMAGE PROCESSING                                                                                    *Mar. 2022 - Present*
- Detect the corner points of the lumbar vertebrae and sacrum(S1).
- Demo

**Predict Semiconductor Processing Result (Collaborated with POSTECH)**                                           *B.S. - M.S.*
MACHINE LEARNING FOR SEMICONDUCTOR                                                                          *Oct. 2021 - Feb. 2023*
- Predict the results of the semiconductor process.

**Pose Transfer**                                                                                                *B.S. - M.S.*
IMAGE GENERATION (GENERATIVE ADVERSARIAL NETWORK)                                                           *Mar. 2021 - May 2022*
- In the human domain using a dataset consisting of lab members' videos. (Mar. 2021 - July. 2021)
- In the cartoon domain and the human domain using datasets consisting of Mixamo and Fashion Dataset. (Nov. 2021 - May. 2022)
- Project Page

**Motorcycle motion-based automatic illegal driving detecting system (Graduation Project)**                            *B.S.*
OBJECT DETECTION & ACTION RECOGNITION                                                                       *May 2021 - Nov. 2021*
- Determine whether a detected motorcycle is illegally driven at a crosswalk.

**Take Off Your Mask!**                                                                                               *B.S.*
IMAGE GENERATION (GENERATIVE ADVERSARIAL NETWORK)                                                           *Jan. 2021 - Apr. 2021*
- Hire people for constructing a server and making an application, and develop an application to remove masks from a mask-wearing image.
- Demo

## Awards

**Naver Paper Award**                                                                                                 *M.S.*
ANNUAL SUMMER CONFERENCE OF THE INSTITUTE OF ELECTRONICS AND INFORMATION ENGINEERS (IEIE)                             *June 2022*
- Cartoon Pose Transfer
- Image, Paper

### Graduation Project 1st Prize

*B.S.*

ELECTRONIC ENGINEERING DEPARTMENT OF YEUNGNAM UNIVERSITY

*Dec. 2021*

- Automatic Motorcycle Illegal Driving Detection System
- Image

# Patents

### FEATURE POINT ANALYSIS METHOD AND APPARATUS IN X-RAY IMAGE

*S.Korea*

PATENT APPLICATION

*May. 2023*

- Landmark Detection of Lumbar Vertrae and First Sacral Vertebra on X-ray Images.
- 10-2023-0063653

### Apparatus and method for pose transformation

*S.Korea*

PATENT APPLICATION

*Aug. 2022*

- Cartoon Pose Transfer.
- 10-2022-0106683

### Method Of Detecting ILLEGAL DRIVING AND APPARATUS THEREOF

*S.Korea*

PATENT APPLICATION

*Dec. 2021*

- Determine whether a detected motorcycle is illegally driven at a crosswalk.
- 10-2021-0177678

# Publications

## INTERNATIONAL

### GLCANet: Glocal Context-Aware Vertebral Landmark Detection Network on X-ray Image

CHANG-HYEON AN, JUN-SOO JANG, and HYUN-CHUL CHOI.

*July, 2023*

- Computers in Biology and Medicine, Under Review.

### Cartoon Pose Transfer

CHANG-HYEON AN and HYUN-CHUL CHOI.

*Oct, 2023*

- Neurocomputing, vol. 554, 126619, DOI: 10.1016/j.neucom.2023.126619.

### Accurate and Reliable Parameter Optimization of Regressional Neural Network for Semiconductor Technology Development

HYEOK YUN*, CHANG-HYEON AN*, HYUNDONG JANG, KYEONGRAE CHO, and JEONG-SIK LEE, SEUNGJOON EOM, CHOONG-KI KIM, MIN-SOO YOO, HYUN-CHUL CHOI, and ROCK-HYUN BAEK (*EQUAL CONTRIBUTION)

*July, 2023*

- Advanced intelligent systems, 2300089, DOI: 10.1002/aisy.202300089.

### Part Affinity Fields and CoordConv for Detecting Landmarks of Lumbar Vertebrae and Sacrum in X-ray Images

CHANG-HYEON AN, JEONG-SIK LEE, JUN-SOO JANG, and HYUN-CHUL CHOI.

*Nov. 2022*

- MDPI Sensors, vol. 22 (22), 8628, DOI: 10.3390/s22228628.

### A Review of Multi-Modal Learning from the Text-Guided Visual Processing Viewpoint

UBAID ULLAH, JEONG-SIK LEE, CHANG-HYEON AN, HYEONJIN LEE, SU-YEONG PARK, ROCK-HYUN BAEK, and HYUN-CHUL CHOI.

*Sep. 2022*

- MDPI sensors, vol. 22 (18), 6816, DOI: 10.3390/s22186816.

## DOMESTIC

### Cartoon Pose Transfer

*Jeju, S.Korea*

CHANG-HYEON AN and HYUN-CHUL CHOI.

*June, 2022*

- Annual Summer Conference of The Institute of Electronics and Information Engineers (IEIE)-link

### Pose Transfer using AdaIN and Generative Adversarial Network

*Jeju, S.Korea*

CHANG-HYEON AN, JEONG-SIK LEE, SU-YEONG PARK, and HYUN-CHUL CHOI.

*July, 2021*

- Annual Summer Conference of The Institute of Electronics and Information Engineers (IEIE)-link

# Experience

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|---|---|---|
| June 2023 | **Attend**, Conference on Computer Vision and Pattern Recognition(CVPR) | *Vancouver, Canada* |
| Oct. 2022 | **Attend**, European Conference on Computer Vision(ECCV) | *Tel Aviv, Israel* |
| July 2022 | **Attend**, IEEE WORLD CONGRESS ON COMPUTATIONAL INTELLIGENCE(WCCI) | *Padua, Italy* |
| July 2020 -<br>Feb. 2022 | **Research Intern**, Intelligent Computer Vision Software Laboratory(ICVSLab) | *Yeungnam University* |