

# Saebyeol Shin

<https://saebyeolshin.github.io>

## RESEARCH INTERESTS

---

Model Compression, Deep Learning, Machine Learning

## EDUCATION

---

### Sungkyunkwan University (SKKU)

*Bachelor of Science in Data Science (Major GPA 3.92/4.0)*

*Bachelor of Science in Computer Science and Engineering (Major GPA 3.95/4.0)*

Seoul, South Korea

Mar. 2019 – Present

## PUBLICATIONS

---

- **“Accelerating CNN via Dynamic Pattern-based Pruning Network”**  
Gwanghan Lee, **Saebyeol Shin**, and Simon S. Woo  
ACM International Conference on Information & Knowledge Management (**CIKM**), 2022
- **“Efficient Multi-Scale Feature Generation Network”**  
Gwanghan Lee, **Saebyeol Shin**, and Simon S. Woo  
Korea Computer Congress (**KCC**), 2022
- **“Deepfake Detection for Fake Images with Facemasks”**  
Sangjun Lee\*, Donggeun Ko\*, Jinyong Park, **Saebyeol Shin**, Donghee Hong, and Simon S. Woo  
Workshop on the security implications of Deepfakes and Cheapfakes (**WDC**), 2022
- **“VFP290K: A Large-Scale Benchmark Dataset for Vision-based Fallen Person Detection”**  
Jaeju An\*, Jeongho Kim\*, Hanbeen Lee, Jinbeom Kim, Junhyung Kang, Minha Kim, **Saebyeol Shin**, Minha Kim, Donghee Hong, and Simon S. Woo  
Neural Information Processing Systems (**NeurIPS**), 2021

### <Work In Progress>

- **“MaskDF: Adaptive Mask Attention for Effective Deepfake Detection in the Surveillance System”**  
**Saebyeol Shin**, and Simon S. Woo  
The British Machine Vision Conference (**BMVC**), 2022  
Status: Under Review

## RESEARCH EXPERIENCE

---

### DASH Lab

*Research Assistant (Advisor: Simon S. Woo)*

SKKU

Jun. 2021 – Present

- Developed pruning network, which preserves the advantages of both static and dynamic networks, enhancing the kernel's representational power and accomplishing actual acceleration.
- Developed early-exit network to reduce the redundancy of the architecture but also generate multi-scale features to improve the performance.
- Conducted research on efficient deepfake detection methods with manipulated images from zoom online meeting to prevent invasion of privacy or threat of security.

## INTERNSHIP

---

### SKT AI Fellowship

*Modeling & Application*

SK Telecom

Jun. 2022 – Present

- Develop deep learning based adaptive colorization model to colorize historical gray scale images containing various situations
- Resolve the ill-posed problem by developing user-interactive colorization model, which is also context/instance adaptive to

mitigate colorization problems such as color bleeding.

## PROJECT

---

### Research on Object Detection in Satellite Images

Industry-Academic Cooperation Researcher

Hanwha System / ICT

Apr. 2022 – Present

- Contribute to the development of rotated object detection network on SAR datasets

### Research on Solving Mathematical Problems Using NLP Technology

Researcher (5th AI Grand Challenge)

IITP

Jul. 2021 – Jul. 2022

- Developed efficient deep learning models to solve mathematical problems that understands the context of natural language with improved inference speed compared to existing deep learning models.
- Generated and augmented various elaborate mathematical questions to enhance the model performance.
- Distributed open source software such as web and application demo, demonstrating the results of math-problem-solver.

### Research on Abnormal Behavior Detection in CCTV Using Object Detection Algorithm

Researcher (4th AI Grand Challenge)

IITP

Jun. 2021 – Dec. 2021

- Created a novel, large-scale dataset (VFP290K) for the robust detection of fallen people composed of fallen people images collected in various real-world scenarios.
- Published paper to NeurIPS implying the usefulness of the dataset for research on fallen person detection, which can further extend to other applications, such as intelligent CCTV or monitoring systems.

## AWARDS AND HONORS

---

### AWARDS

- **Awards (273M KRW of research funding)**, 5th AI Grand Challenge 2021
- **4th Place (Top 1.5%)**, Natural Language-based Climate Technology Classification AI Competition 2021
- **Grand Prize (3M KRW)**, Convergence Basic Project 2020

### SCHOLARSHIP

- **Student Success Changeui Scholarship Award (100% of tuition)** 2022
- **Student Success Didimdol Scholarship** 2020
- **Academic Excellence Scholarship (70% of tuition)** 2020
- **MegaStudy Scholarship** 2019
- **National Scholarship** 2019

## LEADERSHIP & EXTRACURRICULAR ACTIVITIES

---

### Convergence Basic Project on Wise University Life During the COVID-19

Team Leader

SKKU

Jul. 2020 – Aug. 2020

- Provided "Take Eat Easy"; the group purchase service of delivery foods to reduce the burden of expensive delivery fee for single student.

### Summer Data Science Bootcamp: Python Coding Camp

Teaching Assistant

SKKU

Jul. 2020 – Aug. 2020

- Provided basic lecture on python to enhance academic and creative software competencies / skills of students.

### Sungkyunkwan University Institute of Broadcast Research

Member of Content Planning Department

SKKU

Mar. 2019 – Mar. 2020

- Studied and filmed short movies and commercials with team members.
- Organized and participated in various activities and events such as welcoming party, weekly dinners, monthly field trips, and student festival

## **Sungkyunkwan University Global Buddy Assistant**

*Global Buddy Assistant Leader*

**SKKU**

*Sep. 2019 - Dec. 2019*

- Helped exchange students adjust to Korean culture and campus life.
- Taught Korean and learned English by participating in language exchange programs.

## **Volunteering Activities (Total: 67 hours)**

*Volunteer*

*Apr. 2019 - May 2020*

- Helped caring the ill elderly to eat, wash, do laundry etc.
- Taught Math and English to children in community child care centers.
- Weaved fabric face masks for blind people.
- Made doll / toys for children in poverty

## **ADDITIONAL INFORMATION**

---

- *Computer/Programming Skills:* Python, C, JAVA, R, LaTeX (all advanced)
- *Framework:* Pytorch, Tensorflow
- *Languages:* Korean (native fluency), English (full professional proficiency)