

# Saebyeol Shin

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## EDUCATION

### Sungkyunkwan University (SKKU)

BS in Data Science (Major GPA: 3.93/4.0)

BS in Computer Science and Engineering (Major GPA: 3.95/4.0)

Seoul, Korea

03/2019 – Present

## PUBLICATIONS

1. Shin, S.B. and Woo, S.S. “**MaskDF: Adaptive Mask Attention for Effective Deepfake Detection in the Surveillance System.**” IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS), 2022. *Under Review*
2. Lee, G.H., Shin, S.B., and Woo, S.S. “**Accelerating CNN via Dynamic Pattern-based Pruning Network.**” ACM International Conference on Information & Knowledge Management (CIKM), 2022.
3. Lee, G.H., Shin, S.B., and Woo, S.S. “**Efficient Multi-Scale Feature Generation Network.**” Korea Computer Congress (KCC), 2022.
4. Lee, S.J.\*, Ko, D.G.\*, Park, J.Y., Shin, S.B., Hong, D.H., and Woo, S.S. “**Deepfake Detection for Fake Images with Facem asks.**” Workshop on the Security Implications of Deepfakes and Cheapfakes (WDC), 2022.
5. An, J.J.\*, Kim, J.H.\*, Lee, H.B., Kim, J.B., Kang, J.H., Kim, M.H. Shin, S.B., Hong, D.H., and Woo, S.S. “**VFP290K: A Large-Scale Benchmark Dataset for Vision-based Fallen Person Detection.**” Neural Information Processing Systems (NeurIPS), 2021.

\* Equal contributors

## RESEARCH EXPERIENCE

### SK Telecom AI Fellowship

*Modeling & Application Development Intern*

Pangyo, Korea

06/2022 – Present

- Develop a deep learning-based adaptive colorization model to colorize and restore gray images, archives, and records of historically significant events in Korea such as independence movements, Korean War, and democratization protests.
- Build a user-interactive, context/instance-adaptive colorization model to solve ill-posed problems and color bleeding to restore images more accurately and closely to the original in the image colorization task.

### SKKU DASH Lab, Department of Artificial Intelligence

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

Suwon, Korea

06/2021 – Present

- Established a pruning network to preserve the advantages of both static and dynamic networks, enhancing the kernel's representational power and achieving acceleration.
- Built an early-exit network to reduce the redundancy of architecture and generate multi-scale features, improving the overall performance.
- Examined efficient deepfake detection methods with manipulated images to prevent privacy invasion/security threats.

## PROJECT EXPERIENCE

### Object Detection in Satellite Images

*Industry-Academic Cooperation Researcher*

Hanwha System / ICT

05/2022 – Present

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

## **Solving Mathematical Problems using NLP Technology**

**Institute for ICT Promotion (IITP)**

*Researcher, 5<sup>th</sup> AI Grand Challenge*

*07/2021 – 05/2022*

- Constructed 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.
- Created and augmented various elaborate mathematical questions to enhance the model performance.
- Distributed open-source software such as web and applications and demonstrated the solutions for math problems.

## **Abnormal Behavior Detection in CCTV using Object Detection Algorithm**

**IITP**

*Researcher, 4<sup>th</sup> AI Grand Challenge*

*06/2021 – 12/2021*

- Developed a novel, large-scale dataset (VFP290K) for the robust detection of fallen people from images collected in various real-world scenarios.
- Published a research paper on NeurIPS (#5) on the usefulness of the dataset to research fallen person detection, which can further extend to other applications such as intelligent CCTV or monitoring systems.

## **AWARDS AND HONORS**

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### **[Awards]**

- *4<sup>th</sup> Place (top 1.5%),* Natural Language-based Climate Technology Classification AI Competition, *08/2021*  
Green Technology Center/ DICON
- *Research Grant Winner,* 5<sup>th</sup> AI Grand Challenge, Institute for ICT Promotion *07/2021*
- *Grand Prize,* Sungkyunkwan University Convergence Project *08/2020*

### **[Scholarships]**

- SIGIR Student Travel Grants for CIKM 2022 *10/2022*
- SKKU Student Success Changeui Scholarship (100% tuition support) *06/2022*
- SKKU Student Success Didimdol Scholarship *10/2020*
- SKKU Academic Excellence Scholarship (70% tuition support) *02/2020*
- Mega Study Scholarship (external) *05/2019*

## **TEACHING EXPERIENCE**

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### **SKKU Summer Data Science Bootcamp: Python Coding**

**Seoul, Korea**

*Teaching Assistant*

*07/2020 – 08/2020*

- Lectured on Python to enhance students' academic competencies and creative software skills.

## **LEADERSHIP & EXTRACURRICULAR ACTIVITIES**

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### **SKKU Institute of Broadcast Research**

**Seoul, Korea**

*Member, Content Planning Department*

*03/2019 – 03/2020*

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

### **SKKU Global Buddy Program**

**Seoul, Korea**

*Global Buddy Assistant Leader*

*09/2019 – 12/2019*

- Assisted exchange and international students adjust to the Korean culture, society, and university campus life.
- Taught Korean language to exchange students and learned English by participating in language exchange programs.

## **PROFICIENCY IN SKILLS**

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**Computer/Programming:** Python, C, JAVA, R, LaTeX (all advanced)

**Framework:** PyTorch, TensorFlow

**Languages:** Korean (native fluency), English (full professional proficiency)