Saebyeol Shin

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EDUCATION

Sungkyunkwan University (SKKU)   **Seoul, Korea**
BS in *Data Science* (Major GPA: 3.93/4.0)   *03/2019 – Present*
BS in *Computer Science and Engineering* (Major GPA: 3.95/4.0)

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 Facemasks."** 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., Woo, S.S., et al. **"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   **Pangyo, Korea**
Modeling & Application Development Intern   *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   **Suwon, Korea**
Research Assistant (Advisor: Prof. Simon S. Woo)   *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   **Hanwha System / ICT**
Industry-Academic Cooperation Researcher   *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, 5th 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, 4th 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

[Awards]

- *4th Place (top 1.5%),* Natural Language-based Climate Technology Classification AI Competition,   *08/2021*
Green Technology Center/ DACON
- *Research Grant Winner,* 5th 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

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

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

Computer/Programming: Python, C, JAVA, R, LaTeX (all advanced)
Framework: PyTorch, TensorFlow
Languages: Korean (native fluency), English (full professional proficiency)