

TAE KOAN YOO

Email : tk.yoo@g.skku.edu
Portfolio : tkayyoo.github.io

SELECTED PUBLICATIONS & PATENTS [Full Research Portfolio]

- [1] [Pub.] **T. K. Yoo**, W. K. Jung, K. H. Kim, K. B. Kong, "PADS-TAL: Padding Annealed Diffusion Sampling in Text-Aware Latent Space for Robust and Diverse Text-to-Music Generation," *International Conference on Machine Learning (ICML)*, 2026. (Presenter)
- [2] [Pat.] **T. K. Yoo**, W. K. Jung, K. H. Kim, "Method and System for Generating Audio Source Incorporating User-Specified Melody Using a Diffusion Model," Korean Patent Application No. 10-2025-0134391, 2025.
- [3] [Pat.] **T. K. Yoo**, K. H. Kim, "Method and System for Generating Music Using Diffusion Model Based on Genre-Style Structured Information," Korean Patent Application No. 10-2025-0035765, 2025.
- [4] [Pat.] J. H. Lim, H. C. Choi, J. H. Kim, **T. K. Yoo**, "Object Recognition Apparatus and Vehicle Having the Same," US Patent Publication: US20240046658A1, 2024.
- [5] [Pat.] J. H. Kim, H. C. Choi, J. H. Lim, **T. K. Yoo**, "Apparatus and Method for Object Recognition," US Patent Publication: US20240104935A1, 2024.
- [6] [Pub.] **T. K. Yoo**, J. K. Park, J. T. Kim, "VLSI Implementation of Area-Efficient Parallelized Neural Network Accelerator Using Hashing Trick," *International SoC Design Conference (ISOC)*, 2019.
- [7] [Pub.] **T. K. Yoo**, G. H. Hong, D. K. Shin, "Analysis on Accelerating Object Detection in Edge Device with Half-Precision Floating Point," *Korea Computer Congress (KCC)*, 2018. ** Best Paper Award.

WORK EXPERIENCE [Related Research & Technical Writings]

NHN CORPORATION, Seongnam, Republic of Korea

Sep. 2023 — Present

Multi-modal AI Team, [AI Tech Lab](#) | *Senior Research Engineer*

- Led multimodal generative AI projects, developing NHN's first diffusion-based [text-to-music service](#) from proprietary data and adapting personalized text-to-image models for webtoons.
- Pursued independent research on alignment-preserving diversity control in diffusion models, developing PADS-TAL from problem formulation through publication at ICML 2026.
- Developed and optimized real-time automatic speech recognition and streaming pipelines.

HYUNDAI MOTOR COMPANY, Seoul, Republic of Korea

Jan. 2020 — Sep. 2023

[Autonomous Driving SW Team](#) | *Research Engineer*

- Established Hyundai's first camera-LiDAR fusion model for 3D object detection using internal data, achieving the best internal performance and preparing it for production deployment.
- Designed a cross-attention-based camera-LiDAR fusion architecture to improve calibration-sensitive, long-range, and small-object detection.
- Built and accelerated a production-deployed monocular road-boundary recognition pipeline.

EDUCATION

SUNGKYUNKWAN UNIVERSITY, Seoul, Republic of Korea

Feb. 2011 — Feb. 2020

M.S., Electrical and Computer Engineering (advised by Prof. Jong Tae Kim)

GPA: 4.04 / 4.5

- Conducted research on efficient deep learning for embedded systems, including the development of [Double-Stage Weight Sharing](#) as my thesis work, resulting in a registered patent.
- Served as a teaching assistant for undergraduate courses, supporting labs and assignments.

B.S., Electronic and Electrical Engineering

UP-GPA: 4.26/4.5

- National Science and Engineering Scholarship'16
- Introduced [fTrim/vTrim schemes](#) to optimize trim operations in the Linux filesystem-SSD block interface through EXT4 and FTL-layer modifications. Best Undergraduate/Junior Paper Award.

** Undergraduate Research Student (advised by Prof. Dong Kun Shin)

Aug. 2017– Feb. 2018

** Exchange Student Program, The University of Texas at Austin, USA

Jan. 2017– Aug. 2017

** Sergeant, Republic of Korea Army, Republic of Korea

Nov. 2012– Aug. 2014