

Youngjin Moon

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291, Daehak-ro, Yuseong-gu, Daejeon, Republic of Korea

SUMMARY

- **Expertise in AI/ML Acceleration ASIC Design**
 - Digital Deep Learning Accelerator
 - Hardware-Software Co-design (Skilled in sparsity optimization and model compression)
- **End-to-end IC Implementation & Verification**
 - Multiple Tape-outs including Video AI accelerator and Large Language Model accelerator
 - Full stack digital (RTL, Synthesis, PnR) chip design experiences

EDUCATION

- **Ph.D Candidate in AI Semiconductor, KAIST** Mar. 2026 -
 - Advisor: Hoi-Jun Yoo, KAIST (IEEE Fellow since 2008) Daejeon, Republic of Korea
- **M.S in AI Semiconductor, KAIST** Mar. 2024 - Feb. 2026
 - Advisor: Hoi-Jun Yoo, KAIST (IEEE Fellow since 2008) Daejeon, Republic of Korea
 - Thesis: An Energy-Efficient Real-Time Mamba-Based Video Understanding Accelerator for Edge Devices
- **B.S in Mechanical Engineering & Electrical Engineering, SKKU** Mar. 2017 - Feb. 2024
 - GPA: 4.03/4.50 Suwon, Republic of Korea
 - Major1(2) GPA: 4.01(4.05)/4.50

WORK EXPERIENCE

- **Samsung Electronics** Aug. 2022 - Dec. 2022
 - Long-term Internship in Modem Development Team, System LSI* Suwon, Republic of Korea
 - Analyze High Speed Digital Interface Architecture
 - Design Sub-module of High Speed Digital Interface
- **Republic of Korea Army** Sep. 2018 - Apr. 2020
 - Mandatory Military Service* Cheonan, Republic of Korea
 - Trained, disciplined, and instructed soldiers in various military skills
 - Gained leadership and operational experience as a Duty Officer

SKILLS

- **ASIC Design:** Digital Processor & Deep Learning Accelerator Design, Hardware-Software Co-design
- **Programming Languages:** Verilog HDL, Python, C/C++
- **EDA Tools:** Synopsis Design Compiler, IC Compiler II, PrimeTime, Cadence Virtuoso
- **Language:** English (fluent), Korean (native)

REPRESENTATIVE PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [C.1] [ISCAS 2025] **Youngjin Moon**, Sangwoo Ha, Soyeon Kim, Junha Ryu, Hoi-Jun Yoo, and Donghyeon Han. "A 2.67 mJ/frame Video Mamba Accelerator with Importance-aware Redundancy Elimination and SSM Computing Reformulation", 2025 IEEE International Symposium on Circuits and Systems (IEEE ISCAS)
- [C.2] [ISSCC 2026] Sangwoo Ha, Jingu Lee, **Youngjin Moon**, Sunjoo Whang, Wooyoung Jo, Gwangtae Park, Soyeon Um, Junha Ryu, Yurim Jo, and Hoi-Jun Yoo. "SMoLPU: A 122.1 μ J/token Sparse MoE-based Speculative Decoding LLM Processing Unit with Adaptive-Offload NPU-CIM Core", 2026 IEEE International Conference on Solid-State Circuits (IEEE ISSCC)
- [C.3] [S.VLSI 2025] Soyeon Kim, Hankyul Kwon, Jingu Lee, **Youngjin Moon**, Hongseok Lee, Junha Ryu, Zhamaliddin Kalzhan, Sangyeob Kim, Wooyoung Jo, and Hoi-Jun Yoo. "NuVPU: A 4.8 9.6 mJ/frame Progressive NTT-based Unified Video Processor for Stable Video Streaming and Processing with Neural Video Codec", 2025 IEEE Symposium on VLSI Technology and Circuits (IEEE S.VLSI)

- [J.1] [TCAS-II 2025] Sangmyoung Lee, Seryeong Kim, Jongjun Park, **Youngjin Moon**, Minsung Kim, Junha Ryu, Hoi-Jun Yoo, Donghyeon Han. "A 227.1 TOPS/W High Energy-efficiency PNN-based 3D Object Recognition Processor with Spiking Neural Network for Edge Device", IEEE Transactions on Circuits and Systems II, Jul. 2025

HONORS AND AWARDS

- **Academic Excellent Scholarship**
Sungkyunkwan University, 2017-1st semester GPA 4.5/4.5 Sep. 2017
- **Global Student Success Creative Scholarship**
Sungkyunkwan University Sep. 2021
- **S-Hero Gold Prize**
Ministry of Science and ICT of Korea, Field Customized Science and Engineering Project Sep. 2021
- **Intelligent Connect Leading University Competition Grand Prize**
Sungkyunkwan University, Creative Research Presentation Competition Oct. 2021
- **X-Corps Festival Grand Prize (Award of Ministry of Science and ICT)**
Ministry of Science and ICT of Korea, Undergraduate Research Project Contest Nov. 2021
- **SAMSUNG Dream Class Mentor Scholarship**
SAMSUNG, Mentoring middle school students Nov. 2022
- **IEEE ISCAS Student Travel Grant Award**
IEEE Circuits and Systems Society (CASS) Apr. 2025
- **IITP President's Award**
Institute for Information & communication Technology Planning & evaluation(IITP) of Korea, AI Semiconductor Contest Jun. 2025

REFERENCES

1. **Hoi-jun Yoo**
IEEE Fellow, Professor, KAIST
Email: hjyoo@kaist.ac.kr
Thesis Advisor