Hyunseok Oh

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PERSONAL PROFILE

As a passionate advocate for pioneering bold new ideas, I am adept at quickly transforming concepts into testable implementations. My enthusiasm for designing innovative intelligent systems is matched by my deep research interest in areas such as biologically inspired AI, next-generation AI technologies, resource-efficient AI, and theoretical machine learning. I am keen on fostering collaborations to explore new perspectives and achieve breakthroughs in these domains.

EDUCATION

Seoul National University	Seoul, Korea
M.S./Ph.D. in Computer Science and Engineering	Mar. 2019 -
Advisor: Youngki Lee	
Seoul National University	Seoul, Korea
B.S. in Computer Science & Engineering	Mar. 2014 - Feb. 2019

PUBLICATIONS

Conference & Journal Papers

- [C7] Sign Gradient Descent-based Neuronal Dynamics: ANN-to-SNN Conversion Beyond ReLU Network
  Hyunseok Oh and Youngki Lee
  International Conference on Machine Learning 2024 (ICML'24) (To appear).

- [C6] Papez: Resource-Efficient Speech Separation with Auditory Working Memory [PDF] [Code]
  Hyunseok Oh, Juehon Yi, and Youngki Lee
  IEEE International Conference on Acoustics, Speech and Signal Processing 2023 (ICASSP'23).

- [C5] VECA: A New Benchmark for General Cognitive Development. [PDF] [Code]
  Kwanyoung Park*, **Hyunseok Oh***, and Youngki Lee (*Co-primary)
  AAAI Conference on Artificial Intelligence 2022 (AAAI'22) [**Oral Presentation, top 4.15%**].

- [C4] On the Importance of Critical Period in Multi-stage Reinforcement Learning. [PDF]
  Junseok Park, Inwoo Hwang, Min Whoo Lee, **Hyunseok Oh**, Minsu Lee, Youngki Lee, Byoung-Tak Zhang
  ICML Complex Feedback in Online Learning Workshop 2022 (ICMLW'22).

- [C3] Toddler-Guidance Learning: Impacts of Critical Period on Multimodal AI Agents [PDF]
  Junseok Park, Kwanyoung Park, **Hyunseok Oh**, Ganghun Lee, Minsu Lee, Youngki Lee, Byoung-Tak Zhang
  ACM International Conference on Multimodal Interaction 2021 (ICMI'21) [**Acceptance Rate: 13%**].

- [C2] Learning Task-agnostic Representation via Toddler-inspired Learning [PDF]
  Kwanyoung Park, Junseok Park, **Hyunseok Oh**, Byoung-Tak Zhang, and Youngki Lee
  NeurIPS Workshop on BabyMind (NeurIPSW 2020).

- [C1] Exploring Image Reconstruction Attack in Deep Learning Computation Offloading [PDF]
  Hyunseok Oh, Youngki Lee
  ACM International Workshop on Deep Learning for Mobile Systems and Applications (MobiSysW'19).

AWARDS & HONORS

BrainKorea21 Star Student Researcher 2023, Seoul National University	2023
Graduate Student Instructor Scholarship, Seoul National University	2019 - 2021

National Academic Excellence Scholarship   2014 - 2018
Science and Engineering

Skills

Languages Korean (native), English (fluent)
Programming Python, C/C++, Haskell, Golang, Java
Tools Docker, Git
Frameworks Pytorch, Tensorflow, Android SDK

Work Experience

Samsung Electronics, Mobile Division   Suwon, Korea
Student Intern (Advisor: Euteum Park)   June. 2018 - Sep. 2018
  - Developed a prototype Golang-based end-to-end API Gateway for Samsung Cloud.

Academic Services

AAAI Conference Main Track Technical Program Committee   2023,2024,2025
ICASSP Conference Main Track Technical Program Committee   2023,2024

Teaching Experience

Teaching Assistant, Seoul National University   Fall, 2019-2020
M1522.000600 Computer Programming

Teaching Assistant, Seoul National University   Spring, 2019
M1522.002600 Advanced Mobile Computing

Mentored Students

Jimin Chae (SNU Undergraduate, Winter)   2022-2024
Spiking Neural Network
Kwanyoung Park (SNU Undergraduate)   2019-2023
Toddler-inspired Artificial Intelligence [C2,C3,C5]
Younghoon Choi (UC Berkeley Undergraduate)   2023
Listener Identification in Parent-child Interaction

Invited Talks

Chosun Center for Data Science in Humanities Annual Workshop   2024
Chosun University, Gwangju, Korea
CSE AI Summer School   2023
Seoul National University, Seoul, Korea
AIIS Spring Retreat   2022
Seoul National University, Seoul, Korea

Other Projects

Automated Classification of Child-directed Speech in Parent-Child Interaction
Listener identification with speech classification DNN.   Apr. 2023 -
Hyunseok Oh, Eon-Suk Ko, Youngki Lee

VoiceSeeker: Resource-Efficient Audio-Visual Mobile Speaker Separation
Mobile system that separates the target speaker's speech from the input mixture audio.   Feb. 2022 - Sep. 2022
Juheon Yi, Hyunseok Oh, Youngki Lee

Implicit Facial Attribute De-identification
GAN-based face image editing technique that protects all the sensitive attributes implicitly   Mar. 2020 - Feb. 2023
Hyunseok Oh, Youngki Lee

SilverStone: Privacy-Preserving and Efficient DNN Computation Offloading

Cloud-offloaded encrypted DNN inference with homomorphic tensor encryption scheme   Jan. 2019 – Dec. 2019

Hyunseok Oh, Eunsu Baek, Youngki Lee

References

Youngki Lee, Associate Professor, Seoul National University   youngki.lee@gmail.com