Daniel Rho

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Research Interests

Machine learning, neural fields, self-supervised learning, representation learning for various modalities, and audio understanding and generation

Education

Sungkyunkwan University (SKKU) *Seoul, Korea*

MSE in Artificial Intelligence *Sep. 2020 - Aug. 2022*

- Thesis: "Neural Residual Flow Fields for Efficient Video Representations" (Advisor: Jong Hwan Ko)
- CGPA: 4.31 / 4.5

Sungkyunkwan University (SKKU) *Seoul, Korea*

Bachelor of Economics & BSE in Computer Science and Engineering *Mar. 2014 - Aug. 2020*

- CGPA: 4.23 / 4.5
- Major GPA (Computer Science and Engineering): 4.44 / 4.5
- Dean's List (2018)

Publications

Preprints

Understanding Contrastive Learning Through the Lens of Margins
Daniel Rho, TaeSoo Kim, Sooill Park, Jaehyun Park, JaeHan Park
arXiv preprint arXiv:2306.11526 (2023). 2023

Conference Publications

Mip-Grid: Anti-aliased Grid Representations for Neural Radiance Fields
Seungtae Nam, Daniel Rho, Jong Hwan Ko, Eunbyung Park
Advances in Neural Information Processing Systems, 2023

FFNeRV: Flow-Guided Frame-Wise Neural Representations for Videos
Joo Chan Lee, Daniel Rho, Jong Hwan Ko, Eunbyung Park
Proceedings of the 31th ACM International Conference on Multimedia, 2023

Masked Wavelet Representation for Compact Neural Radiance Fields
Daniel Rho*, Byeonghyeon Lee*, Seungtae Nam, Joo Chan Lee, Jong Hwan Ko, Eunbyung Park
Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023

Regression to Classification: Waveform Encoding for Neural Field-Based Audio Signal Representation
TaeSoo Kim*, Daniel Rho*, Gahui Lee, JaeHan Park, Jong Hwan Ko
ICASSP 2023 - 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2023

Neural Residual Flow Fields for Efficient Video Representations
Daniel Rho, Junwoo Cho, Jong Hwan Ko, Eunbyung Park
Proceedings of the Asian Conference on Computer Vision (ACCV), 2022

Streamable Neural Fields
Junwoo Cho*, Seungtae Nam*, Daniel Rho, Jong Hwan Ko, Eunbyung Park
Computer Vision – ECCV 2022, 2022

NAS-VAD: Neural Architecture Search for Voice Activity Detection
Daniel Rho, Jinhyeok Park, Jong Hwan Ko
Proc. Interspeech 2022, 2022

Professional Experience

Research Engineer *Seoul, Korea*

AI2XL (AI to Everything Lab), KT *Jul. 2022 - Present*

Undergraduate Research Assistant *Seoul, Korea*

IRIS LAB, SKKU *Jun. 2019 - Aug. 2020*

Patents

"A Method for Inferring of Generating Direction of Sound Using Deep Network and an Apparatus for the Same" *Korea*

Application No.: 10-2020-0032737 *2020*

Research Projects

"Deep Learning Techniques for Multi-Intelligence using Drones" *Korea*

Ministry of Science and ICT, Korea *Jan. 2021 - Dec. 2021*

"Deep Neural Network Based Real-Time Accurate Voice Source Localization using Drones" *Korea*

Ministry of Science and ICT, Korea *Jun. 2019 - Dec. 2020*

Awards, Honors and Scholarships

Jan. 2021 **First Place & Ministerial Award**, Artificial Intelligence Grand Challenge, Ministry of Science and ICT *Korea*

Fall 2020 **Sungkyun Honorable Scholarship (Fall 2020 - Spring 2022)**, Sungkyunkwan University *Korea*

Jun. 2019 **Third Place**, Artificial Intelligence Grand Challenge, Ministry of Science and ICT *Korea*

Fall 2019 **Academic Excellence Scholarship**, Sungkyunkwan University *Korea*

Fall 2018 **Academic Excellence Scholarship**, Sungkyunkwan University *Korea*

Skills

Programming Python (PyTorch, TensorFlow), C/C++, git

Miscellaneous Piano, Zertifikat Deutsch B1

Extracurricular Activities

Teaching Assistant *Korea*

Sungkyunkwan University (SKKU)

- Operating Systems (Fall 2020)
- Basic data structures and algorithms (Spring-Fall 2019)

Volunteer *Korea*

SKKU-HKUST Intercultural Peer Learning Program *Jul. 2018*

Honorary Discharge as a Sergeant *Korea*

Republic of Korea Air Force *Jan. 2016 - Jan. 2018*

Student Council Member *Korea*

College of Social Sciences, SKKU *Mar. 2015 - Dec. 2015*