Daniel Rho

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Research Interests

Machine learning, neural rendering, representation learning, and audio understanding and generation

Education

University of North Carolina at Chapel Hill

North Carolina, United States

Ph.D. in Computer Science

Aug. 2024 -

- Advisor: Roni Sengupta

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, Co-advisor: Eunbyung Park)
- 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 (top 3%)
- Dean's List (2018)

Publications

Conference Publications

Compact 3D Gaussian Representation for Radiance Field
Joo Chan Lee, **Daniel Rho**, Xiangyu Sun, Jong Hwan Ko, Eunbyung Park
*CVPR 2024 (**highlight**) - Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*

Coordinate-Aware Modulation for Neural Fields
Joo Chan Lee, **Daniel Rho**, Seungtae Nam, Jong Hwan Ko, Eunbyung Park
*ICLR 2024 (**spotlight**) - International Conference on Learning Representations*

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

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

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

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 - IEEE International Conference on Acoustics, Speech and Signal Processing

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

Streamable Neural Fields
Junwoo Cho*, Seungtae Nam*, **Daniel Rho**, Jong Hwan Ko, Eunbyung Park
ECCV 2022 - Proceedings of the European Conference on Computer Vision

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

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)

Professional Experience

Research Engineer *Seoul, Korea*
AI Tech Lab, KT *Jul. 2022 - Jun. 2024*

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*

Academic Services

Conference Reviewer CVPR 2024, ACM MM 2024, NeurIPS 2024

Skills

Programming Python (PyTorch, TensorFlow), C/C++, CUDA
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*