BYEONGJOO AHN

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RESEARCH INTERESTS

My research interests are in computational imaging, computer vision, and computer graphics. I am interested in identifying visible hints offered by our physical surroundings such as interreflections, and developing imaging systems extending the visibility far beyond human ability such as the reconstruction of objects that are not in the direct line of sight or those with strong self-occlusions.

EDUCATION

Carnegie Mellon University   Pittsburgh, PA
Ph.D. in Electrical and Computer Engineering   2017 – 2023
Advisors: Aswin C. Sankaranarayanan and Ioannis Gkioulekas
Thesis: "Full-surround 3D Reconstruction using Kaleidoscopes"
Thesis Committee: Aswin C. Sankaranarayanan (CMU), Ioannis Gkioulekas (CMU),
                  Manmohan Chandraker (UCSD), Shree K. Nayar (Columbia)

Seoul National University   Seoul, Korea
M.S. in Electrical Engineering and Computer Science   2012 – 2014
Advisor: Kyoung Mu Lee
Thesis: "Occlusion-Aware Motion Deblurring for Bilayer Scenes"
Outstanding Thesis Award

Seoul National University   Seoul, Korea
B.S. in Electrical and Computer Engineering   2008 – 2012
Summa Cum Laude

PROFESSIONAL EXPERIENCE

Apple   Seattle, WA
Research Scientist   Jan. 2024 – Present

Apple   Seattle, WA
Research Intern with Rick Chang and Karren Yang   Jan. 2023 – Sep. 2023

Snap Inc.   (Remote) New York, NY
Research Intern with Shree K. Nayar and Jian Wang   May. 2020 – Aug. 2020

Carnegie Mellon University   Pittsburgh, PA
Research Assistant   Sep. 2017 – Dec. 2023

Korea Institute of Science and Technology   Seoul, Korea
Research Scientist   Mar. 2014 – Aug. 2017

HP Labs   Palo Alto, CA
Intern with Irwin Sobel   Jan. 2012 – Feb. 2012

PUBLICATIONS

"Novel-view Acoustic Synthesis From 3D Reconstructed Rooms"
Byeongjoo Ahn, Karren Yang, Brian Hamilton, Jonathan Sheaffer, Anurag Ranjan,
Miguel Sarabia, Oncel Tuzel, Jen-Hao Rick Chang
arXiv, 2023

"Neural Kaleidoscopic Space Sculpting"
Byeongjoo Ahn, Michael De Zeeuw, Ioannis Gkioulekas, Aswin C. Sankaranarayanan
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023

"Kaleidoscopic Structured Light"
Byeongjoo Ahn, Ioannis Gkioulekas, Aswin C. Sankaranarayanan
ACM Transactions on Graphics (Proc. SIGGRAPH ASIA), 2021

"Convolutional Approximations to the General Non-Line-of-Sight Imaging Operator"
Byeongjoo Ahn, Akshat Dave, Ashok Veeraraghavan, Ioannis Gkioulekas, Aswin C. Sankaranarayanan
IEEE/CVF International Conference on Computer Vision (ICCV), 2019 (Oral Presentation)

"Occlusion-Aware Video Deblurring with a New Layered Blur Model"
Byeongjoo Ahn, Tae Hyun Kim, Wonsik Kim, Kyoung Mu Lee
arXiv preprint arXiv:1611.09572, 2016

"Reduced Illumination Patterns for Acquisition of Specular and Diffuse Normal Maps"
Byeongjoo Ahn, Junghyun Cho, Taekyung Yoo, Ig-Jae Kim
ACM SIGGRAPH ASIA Poster, 2016

"Dynamic Scene Deblurring"
Tae Hyun Kim, **Byeongjoo Ahn**, Kyoung Mu Lee
IEEE International Conference on Computer Vision (ICCV), 2013

AWARDS AND HONORS

Top Reviewer, NeurIPS 2022	2022
Doctoral Study Abroad Scholarship, Korea Foundation for Advanced Studies	2017
Fulbright Graduate Study Award (gratefully declined), Fulbright	2017
Best Poster Award, KIST R&D EXPO	2014
Outstanding Thesis Award, Department of EECS, Seoul National University	2014
Honorable Mention Award, Samsung Humantech Paper Award	2014
Graduate Scholarship, Kwanjeong Educational Foundation	2012
Presidential Science Scholarship, Korea Student Aid Foundation	2008

TEACHING

Teaching Assistant, Carnegie Mellon University
· 15-463/663/862 Computational Photography	Fall 2020
· Recitation for 18-290 Signals and Systems	Spring 2019, 2020

INVITED TALKS

"Kaleidoscopic Imaging for Full-Surround 3D Reconstruction"

· Connective AI Workshop   Aug. 2023
· KIST, Visual Intelligence Group   Apr. 2023
· Meta Reality Labs Research Pittsburgh, TechTalk   Apr. 2022
· Seoul National University, Topics in 3D Vision Workshop   Jan. 2022

SERVICES

Program Committee, ICCP 2023

Reviewer, CVPR (2019, 2020, 2021, 2022, 2023, 2024), ICCV (2019, 2021, 2023), ECCV (2020), BMVC (2019), ICLR (2022, 2023), NeurIPS (2022, 2023), SIGGRAPH (2022), SIGGRAPH ASIA (2023), TIP (2022–), TCI (2024)

Student Volunteer, ACCV 2012, ICCP 2021

Volunteer, Camera Building Workshop as part of Gelfand Outreach Program at CMU (2019)

Mentor, CMU AI Mentoring Program (2021)

TECHNICAL SKILLS

Python, MATLAB, C/C++, PyTorch, PyTorch3D

GRADUATE COURSEWORK

16-889	Learning for 3D Vision	Spring 2022
15-868	Physics-based Rendering	Spring 2021
33-353	Intermediate Optics	Fall 2020
15-858	Discrete Differential Geometry	Spring 2020
18-771	Linear Systems	Fall 2019
10-707	Deep Learning	Spring 2019
10-725	Convex Optimization	Fall 2018
16-823	Physics based Methods in Vision	Spring 2018
10-701	Introduction to Machine Learning	Spring 2018
16-720B	Computer Vision	Fall 2017
18-793	Image and Video Processing	Fall 2017
36-705	Intermediate Statistics	Fall 2017