

## **Title: Supervised and Self-Supervised Image Denoising**

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### **Abstract:**

There have been advancements in image denoising using deep learning. Initially, neural networks were trained using synthetic noise, and later with real noises from DND and SIDD datasets. With high-quality real noise image pairs, researchers have developed various network architectures and training methods. However, DND and SIDD cover only a small portion of real-world noises, as there are many other types of noises depending on cameras and image modalities. Consequently, self-supervised denoising, which utilizes only the given noisy image without additional ones, has gained attention. In this presentation, I will discuss the research on deep-learning-based image denoising in our laboratory, covering supervised and self-supervised denoising approaches, as well as our future work to further improve image denoising performance and applications.

### **Biography:**



**Nam Ik Cho** received his B.S., M.S., and Ph.D. degrees in control and instrumentation engineering from Seoul National University, Seoul, Korea, in 1986, 1988, and 1992, respectively. From 1991 to 1993, he was a Research Associate at the Engineering Research Center for Advanced Control and Instrumentation, Seoul National University. From 1994 to 1998, he was with the University of Seoul, Seoul, Korea, as an Assistant Professor of Electrical Engineering. He worked as a visiting scholar in the Dept. of Electrical Eng., University of California, Santa Barbara, in 1996. He joined the Dept. of Electrical and Computer Engineering at Seoul National University, in 1999, where he is currently a Professor. During 2011-2013, he served as a Vice Dean of the College of Engineering at Seoul National University, and during 2014-2016 he served as Director of the Institute of New Media and Communications at Seoul National University. His research interests include image processing, adaptive filtering, and computer vision. In this area, he published 100+ international journal papers, 190+ international conference papers, and 25 U.S. Patents.

Dr. Cho is currently a Senior Member of the IEEE Signal Processing Society, serving as an Associate Editor of IEEE Trans. Image Processing, handling editor of Signal Processing, Elsevier, and EURASIP Journal of Image and Video Processing. He also served as a Board of Governor (BoG) of the Asia-Pacific Signal and Information Processing Association (APSIPA) 2017-2019 and is again serving as the BoG 2021-2022. He was the Technical Program Co-Chair of APSIPA ASC 2020, Overview Session Co-Chair of APSIPA ASC 2019, Workshop Chair of ACM Multimedia 2018, Technical Program Co-Chair of IEEE ICASSP 2017, Technical Program Co-Chair of APSIPA ASC 2016, Special Session Chair of IEEE BMSB 2012, and Finance Chair of IEEE ISPACS 2004. He received the 2019 EURASIP Journal of

Video and Image Processing Best Paper Award, 2017 Journal of Society of Information Display Best Paper Award, 2014 Chaster Sall Award from IEEE Consumer Electronics Society, Best Poster Paper Award from the Society of Information Display Eurodisplay 2015, and Best Paper Award from IEEE ICSIPA 2015.