

## **Model-based Deep Learning for Low-level Vision**

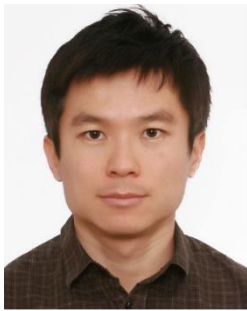
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### **ABSTRACT**

While recent deep learning-based approaches have demonstrated significant performance improvements in many low-level vision tasks, interpreting and analyzing their behaviors are challenging, and their performance is heavily affected by the diversity of training data. In contrast, traditional model-based approaches exhibit inferior performance compared to learning-based algorithms, despite their theoretical thoroughness. In this talk, we will provide a brief introduction to model-based learning approaches, which aim to take advantage of the strengths of both learning- and model-based methods while overcoming their weaknesses. Then, we will present two works from of our research group on model-based learning approaches to image restoration: hyperspectral image restoration and underwater image enhancement.

### **BIOGRAPHY**



**Chul Lee** received the Ph.D. degrees in electrical engineering from Korea University, Seoul, South Korea, in 2013. From 2013 to 2014, he was a Postdoctoral Scholar with the Department of Electrical Engineering, Pennsylvania State University, University Park, PA, USA. From 2014 to 2015, he was a Research Scientist with the Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong. From 2015 to 2019, he was an Assistant Professor with the Department of Computer Engineering, Pukyong National University, Busan, South Korea. In March 2019, he joined the Department of Multimedia Engineering, Dongguk University, Seoul, where he is currently an Associate Professor. His current research interests include image processing and computational imaging with an emphasis on restoration and high dynamic range imaging. He received the Best Paper Award from the Journal of Visual Communication and Image Representation in 2014. He is an Editorial Board Member of the Journal of Visual Communication and Image Representation. He is an APSIPA Distinguished Lecturer for the term 2023–2024.