

# Keynote Speakers I



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## *“Task Adaptive Meta-Learning for Computer Vision”*

**Abstract:** Few-shot learning is an emerging yet challenging problem in which the goal is to achieve generalization from only a few examples. Meta-learning tackles few-shot learning via learning prior knowledge shared across tasks and using it to learn new tasks. Owing to the flexibility and generalizability, optimization-based meta-learning algorithms have emerged as one of the promising methods for few-shot learning. MAML is one of the most popular instances of optimization approaches, owing to its simplicity and applicability across diverse problem domains. However, it is known for its low generalization performance. To overcome the limitations of the MAML-based methods, we introduce effective and flexible optimization-based meta-learning algorithms that are generalizable across diverse practical domains. More specifically, to achieve outstanding and robust performance, novel task-adaptive optimization schemes (task-adaptive initialization, task-adaptive update-rule, and task-adaptive loss

function) are introduced to more effectively facilitate the adaptation to diverse tasks. The extensive experiments have demonstrated the outstanding performance of proposed meta-learning algorithms with task-adaptive optimization across few-shot learning benchmark datasets and more realistic computer vision problems such as visual tracking and video frame interpolation.

**Short Bio:** KYOUNG MU LEE (Fellow, IEEE) is currently the Editor in Chief of the IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE (TPAMI); He received the B.S. and M.S. degrees in control and instrumentation engineering from Seoul National University (SNU), Seoul, South Korea, in 1984 and 1986, respectively, and the Ph.D. degree in electrical engineering from the University of Southern California, in 1993. He is the director of the Interdisciplinary Graduate Program in Artificial Intelligence at SNU. He is an Advisory Board Member of the Computer Vision Foundation (CVF). He was a Distinguished Lecturer of the Asia-Pacific Signal and Information Processing Association (APSIPA), from 2012 to 2013. He has received several awards, in particular, the Medal of Merit and the Scientist of Engineers of the Month Award from the Korean Government, in 2018 and 2020, respectively; the Most Influential Paper Over the Decade Award by the IAPR Machine Vision Application, in 2009; the ACCV Honorable Mention Award, in 2007; the Okawa Foundation Research Grant Award, in 2006; the Distinguished Professor Award from the College of Engineering of SNU, in 2009; and the SNU Excellence in Research Award in 2020. He has also served as a General Chair for ICCV2019, ACMMM2018, and ACCV2018; a Program Chair for ACCV2012; a Track Chair for ICPR2020 and ICPR2012; and an Area Chair for CVPR, ICCV, and ECCV many times. He has served as an Associate Editor-in-Chief (AEIC) and an Associate Editor for the Machine Vision and Application (MVA) journal, the IPSJ Transactions on Computer Vision and Applications (CVA), and the IEEE SIGNAL PROCESSING LETTERS (SPL); and an Area Editor for the Computer Vision and Image Understanding (CVIU). He is the founding member and served as the President of the Korean Computer Vision Society (KCVS). Prof. Lee is a Fellow of IEEE, a member of the Korean Academy of Science and Technology (KAST) and the National Academy of Engineering of Korea (NAEK).

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