

專題演講

講者： 林嘉文 Prof. Chia-Wen Lin (National Tsing Hua University)

題目： When Deep Learning Meets IC Fabrication: A Data-Driven Prediction Approach

摘要：

Traditionally, after ID circuit design and layout, it takes months to fabricate an IC wafer, involving a multiple-step sequence of photolithographic and chemical etch processing, which can significantly deform the layout patterns and is too complex to model mathematically. Usually we cannot identify defects (e.g., broken wires) of metal wires due to deformations of IC circuit shape caused by a fabrication process until capturing the scanning electron microscope (SEM) images of fabricated IC wafers, making the circuit design and verification very costly and time-consuming. To address the above problem, there are three essential concerns in terms of IC design for manufacturability (DfM): (1) How to predict the manufactured IC circuit shape from an IC layout so as to assess the layout quality accordingly in a pre-simulation process; (2) How to automatically modify photomask patterns so that the manufactured IC circuit shape can match the desired patterns as close as possible; (3) How to efficiently update the learned prediction models by detecting and learning from novel layout patterns. In this talk, we will show how deep-learning-based computer vision can effectively and efficiently address the above three issues and help improve IC DfM.

簡歷：

Prof. Chia-Wen Lin received his PhD degree in Electrical Engineering from National Tsing Hua University (NTHU), Hsinchu, Taiwan in 2000. He is currently a Professor with the Department of Electrical Engineering, NTHU, Taiwan. He also serves as Deputy Director of the AI Research Center of NTHU. His research interests include image/video processing, computer vision, and video networking.

Dr. Lin is an IEEE Fellow, and served on IEEE Circuits and Systems Society (CASS) Fellow Evaluating Committee in 2021. He is Steering Committee Chair of IEEE ICME (2020-2021), and was a Distinguished Lecturer of IEEE CASS during 2018-2019 and President of the Chinese Image Processing and Pattern Recognition (IPPR) Association, Taiwan (2019-2020), and. He has served as Associate Editor of IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, IEEE Transactions on Circuits and Systems for Video Technology, and IEEE Multimedia.