



# APSIPA

ASIA PACIFIC SIGNAL AND INFORMATION PROCESSING ASSOCIATION

## Taiwan Local Chapter

# Conditional Information-Aware Neural Image and Video Coding

**Date:** June 7 (Saturday), 2025

**Time:** 09:00 am - 10:00 am Taiwan (UTC +8)

**Speaker:** Dr. Ying Liu, APSIPA Distinguished Lecturer, Associate Professor, Dept. of Computer Science & Engineering, Santa Clara University, USA

**Abstract:** Recent years have witnessed a growing interest in utilizing neural networks for image and video compression. Most existing neural video compression approaches adopt the predictive residue coding framework, which is sub-optimal in removing redundancy across frames. In contrast, conditional coding has emerged to directly compress the inter frame conditioned on the predicted frame, rather than compressing the residue. In this talk, we will start with the motivation and theory behind conditional coding, followed by introducing our research work that leveraged conditional information for neural image compression. Our approach first compresses a low-resolution version of the target image and up-scales the decoded image using an off-the-shelf super-resolution model. The super-resolved image then serves as the condition to compress and decompress the target high-resolution image. Further, we will talk about how to utilize conditional coding for generative adversarial network (GAN)-based video compression, which aims to achieve high perceptual quality at low bit rates. We will demonstrate the effectiveness of our methods with quantitative and visual experimental results.

### Speaker's Bio:



Dr. Ying Liu is an Associate Professor in the Department of Computer Science and Engineering at Santa Clara University, California, United States. She graduated with a Ph.D. degree from the Department of Electrical Engineering, The State University of New York at Buffalo in 2012. Her main research interests are in deep learning-based image and video processing and coding, coding for machines, point cloud coding, and vision-language models. She is a member of IEEE. Her research articles are published in prestigious journals such as the IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), IEEE Transactions on Multimedia (TMM), IEEE Transactions on Consumer Electronics, IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS), Pattern Recognition (Elsevier), and many flagship conferences such as ISCAS, VCIP, ICIP, PCS, ICASSP, etc. She serves as an Associate Editor for the IEEE Transactions on Circuits and Systems for Video Technology, an Associate Editor for the EURASIP Journal on Image and Video Processing, and she also serves as the member of the IEEE Circuits and Systems Society (CASS) Visual Signal Processing and Communications Technical Committee (VSPC-TC) and the CASS Multimedia Systems & Applications Technical Committee (MSATC). She is the Vice Chair of the Asia-Pacific Signal and Information Processing Association (APSIPA) US Local Chapter. Dr. Liu was the moderator of the APSIPA US Local Chapter Panel on “Visual Coding for Machines”, March 2023. She was the publicity chair of PCS 2022, and the publication chair of MMSP 2024.

**Host:** Prof. Wen-Hsiao Peng, National Yang Ming Chiao Tung University, Taiwan



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**Zoom Link:**

**Topic: APSIPA DL Talk (Taiwan Local Chapter)**

**Time: Jun 7, 2025 09:00 AM Taipei**

**Join Zoom Meeting**

**<https://us06web.zoom.us/j/71462778679?pwd=L6lVkJZYbb8bSWK3yNTbQL9bZCsNzON.1>**

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