

# [Invited talk] Machine Learning for Creative AI Applications in Music

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In this talk, I will briefly introduce three latest projects in our lab at Academia Sinica on creative applications in music, including the singing voice separation project, GenMusic (music generation) project, and the DJnet project. The first project is about separating the singing voice from the musical accompaniments, which can be used as a pre-processing step for many music related applications. The second project is about learning from massive collection of MIDI files to generate multi-track music by a generative adversarial network (GAN). The generative model can be used for generating music either from scratch, or by accompanying a given (instrument) track. The third project is about creating an AI DJ that knows how to manipulate, sample, and sequence musical pieces to create a personalized playlist. The goal of these projects is to enrich the way people create and interact with music in their daily lives, using the latest machine learning (deep learning) techniques.

**Yi-Hsuan Yang** is an Associate Research Fellow with Academia Sinica. He received his Ph.D. degree in Communication Engineering from National Taiwan University in 2010. He is also a Joint-Appointment Associate Professor with the National Cheng Kung University, Taiwan. His research interests include music information retrieval, affective computing, multimedia, and machine learning. Dr. Yang was a recipient of the 2011 IEEE Signal Processing Society Young Author Best Paper Award, the 2012 ACM Multimedia Grand Challenge First Prize, the 2014 Ta-You Wu Memorial Research Award of the Ministry of Science and Technology, Taiwan, and the 2015 Best Conference Paper Award of the IEEE Multimedia Communications Technical Committee. He is an author of the book Music Emotion Recognition (CRC Press 2011). In 2014, he served as a Technical Program Co-Chair of the International Society for Music Information Retrieval Conference (ISMIR). In 2016, he started his term as an Associate Editor for the IEEE Transactions on Affective Computing and the IEEE Transactions on Multimedia. Dr. Yang is a senior member of the IEEE.

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