

# Invited Talk

# Cosmos World

# Foundation Models for

# Physical AI



**Date:** June 11, 2025 14:00~15:00 **Venue:** NTU BL-101 (台大博理館101)

## Speaker



**Dr. Ming-Yu Liu**

Vice President of Research  
Nvidia

## Bio

Ming-Yu Liu is a Vice President of Research at NVIDIA and a Fellow of IEEE. He leads the Deep Imagination Research group at NVIDIA, which focuses on Generative AI for Physical AI. His research team has helped create several new product categories for NVIDIA, including NVIDIA Cosmos, a developer-first world foundation model platform for Physical AI, NVIDIA Edify, a family of Generative AI models that powers Getty Images and Shutterstock's GenAI services, NVIDIA Canvas [GauGAN], a real-time painting tool that uses GANs to turn simple brushstrokes into photorealistic images, and NVIDIA Maxine [LivePortrait], an AI-first cloud-native video streaming platform. His research group constantly publishes scientific papers in top-tier AI conferences regularly, including NeurIPS, ICLR, ICML, CVPR, ICCV, ECCV, and SIGGRAPH. Several of their papers received prestigious awards.

## Abstract

In this talk, I will introduce Cosmos — a family of world foundation models designed to advance Physical AI. The Cosmos framework consists of three core models: Cosmos-Predict, Cosmos-Transfer, and Cosmos-Reason. Cosmos-Predict is a world model that forecasts future states of the physical environment based on current observations and control inputs. Cosmos-Transfer is a conditional generation model that enhances the realism of simulation outputs, supporting robust data augmentation for Physical AI systems. Cosmos-Reason enables embodied agents to perform structured physical reasoning, bridging perception, prediction, and action. Together, these models provide a powerful foundation for building and scaling Physical AI applications. I will showcase how the Cosmos suite empowers developers and researchers to accelerate the development of intelligent, physically grounded agents.

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聯絡人:黃小姐(ieeecasstaipai@gmail.com)