

Call for Paper

In the multimedia era, 3D data has emerged as a cornerstone for a wide range of applications. However, deploying 3D deep learning methods in real-world scenarios presents a significant challenge: the scarcity of data, particularly labeled data, for model training. Compared to 2D tasks, acquiring and annotating 3D data is substantially more resource-intensive and often demands sophisticated domain expertise. For instance, while 2D images are readily available online, 3D assets such as CAD models or real-world scans are much scarcer. Annotating 3D scenes typically requires manual inputs from multiple viewpoints and intricate interactions. Similarly, high-quality 3D reconstruction depends on high-resolution images captured densely from multiple angles. Despite these challenges, the field has made remarkable strides toward real-world deployment. Advances like Neural Radiance Fields (NeRF) and 3D Gaussian splatting have revolutionized 3D reconstruction from sparse observations. Semi-supervised and weakly-supervised approaches have shown potential in mitigating data scarcity by reducing reliance on expensive annotations. Furthermore, the integration of 2D foundation models has unlocked innovative pathways to leverage extensive 2D knowledge for improving 3D representation learning.

This special session aims to bring together researchers and practitioners to explore the latest theoretical advancements, cutting-edge techniques, and practical applications of 3D deep learning under limited supervision. We welcome contributions that address fundamental research challenges, propose innovative solutions, or showcase real-world applications, with a focus on overcoming data scarcity while ensuring robustness and scalability.

Topics of Interest:

We encourage submissions addressing, but not limited to, the following topics:

- 3D reconstruction from sparse observations
- Generative model-assisted 3D reconstruction and novel view synthesis
- 3D assets generation
- Semi-supervised, weakly-supervised and active learning for 3D data
- Self-supervised learning for 3D representation learning
- 2D model-assisted 3D deep learning
- Domain adaptation and generalization for 3D models in real-world environments
- Leveraging unlabeled or sparse data for 3D scene understanding
- Applications of limited supervision in real-world 3D tasks
- Challenges in evaluating and benchmarking 3D deep learning models under limited supervision

Submission Portal: <https://cmt3.research.microsoft.com/ICME2025> (same as main conference)

Author Guidelines: All requirements are the same as the main conference. Please refer to the main conference author guidelines for details.

Way of Submission: Please choose the special session as the primary subject area (if not appeared during your submission, please come back to revise the primary subject area before the deadline).

Submission Deadline: 13th Dec 2024 (please confirm with conference [website](#) for final deadline)

Acceptance Notification: 14th Mar 2025

Conference Date: 30th Jun – 4th Jul 2025

Conference Venue: La Cité Nantes Congress Centre, Nantes, France

Organizers:

Xun Xu, Institute for Infocomm Research (I²R), A*STAR

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