

## SEMINAR ANNOUNCEMENT

**Thursday February 20<sup>th</sup>, 2025**

**at 11:30 am**

**Room "Sala Seminari" - Abacus Building (U14)**

### **Building a 10 Million Scale 3D Generative Model Wavelet-Based Representations and Scalable Architectures**

#### **Speaker**

**Arianna Rampini**

Research Scientist at Autodesk

#### **Abstract**

Recent advances in generative AI have transformed text and image synthesis, yet high-fidelity 3D content generation remains challenging due to the complexity of 3D data and the associated computational burden. In this talk, I will present our progress in large-scale 3D generative models. After reviewing existing methods and their limitations, I will detail our technical innovations in learning from an extensive dataset of 10 million shapes. At the core of our methodology lies a novel wavelet-based 3D representation that enables compact, high-fidelity shape encoding while remaining compatible with modern generative architectures. I will demonstrate how we leveraged this representation across three distinct frameworks: Make-A-Shape (DDPM), WaLa (latent diffusion), and 3D-WAG (autoregressive generation). Our approach is versatile, supporting conditioning on various input modalities such as text, images, point clouds, and voxels. Finally, I will conclude by discussing its potential impacts and downstream applications.

#### **Short Bio**

Arianna Rampini is a Research Scientist at Autodesk, working on 3D generation and machine learning for computer graphics and geometry processing. She earned her Ph.D. in Computer Science and a master's in Physics from Sapienza University in Rome, where she focused on shape analysis and spectral methods under Prof. Emanuele Rodolà. During her Ph.D., she was a visiting researcher at Ecole Polytechnique, contributing to award-winning work recognized with Best Paper Awards at 3DV in 2019 and 2020. At Autodesk, Arianna is committed to advancing AI research for 3D content creation and improving tools for designers and creators.

contact person for this Seminar: [simone.melzi@unimib.it](mailto:simone.melzi@unimib.it)