

05 Generated object

Figure 1 coordinate 5 | Subitems 16, 17, 18

Machine learning

16 Image

Noise -> sampled intensity array
Represent image appearance
Array meaning matters, not size
Test coverage / condition fit

17 Texture

Noise / example -> texture
Model appearance statistics
Geometry is fixed in this example
Test correlation and repetitions

18 Shape

Latent -> sampled geometry
Points / mesh / occupancy / SDF
Specify coordinates and topology
Test validity and coverage

Computer vision

— StyleGAN face images

Latent + noise -> RGB face
Vary pose and visual appearance
Raster output, not explicit mesh
Test diversity and distribution

— Text2Tex surface texture

Mesh + text -> texture map
Paint from multiple viewpoints
Keep supplied mesh geometry
Test seams / view consistency

— PointFlow point clouds

Latent -> new 3D shape
Sample points within each shape
No mesh connectivity specified
Test surface coverage / diversity

Medical image analysis

— MAISI synthetic CT

Masks + noise -> 3D CT image
Vary spacing and image size
Target anatomy and CT intensity
Test organ fit and intensity bias

— Virtual stain analogy

Autofluorescence -> stain image
GAN changes tissue appearance
Cell layout, not a mesh UV map
Test matched stained structures

— CAN-FLOW cardiac anatomy

Age / sex / BMI -> heart shape
Sample biventricular anatomies
Target metadata-related variation
Test phenotypes / shape validity