

# Leonardo AI - 3D Modeling Features

## Inputs

Leonardo AI accepts a variety of input types to generate 3D models:

- Text prompts (e.g., 'futuristic spaceship with neon blue lights')
- Image uploads (e.g., sketches, blueprints, or concept art)
- Blueprint-style technical drawings
- Reference images for style consistency
- Scene descriptions to generate contextual 3D environments

## Outputs

Leonardo AI provides the following outputs for 3D modeling:

- 360-degree preview video (rotating model visualization)
- Textured GLB file with PBR (Physically Based Rendering) materials
- High-resolution textured 3D meshes
- Low-poly optimized versions for lightweight platforms like mobile or AR
- NeRF (Neural Radiance Fields) representations for volumetric rendering
- 3D Gaussian splats optimized for real-time applications
- Layered model formats (e.g., separate files for mesh, textures, and lighting)

## Technical Specifications

Supported File Formats:

- GLB
- OBJ
- FBX
- USDZ (for AR applications)

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- NeRF
- 3D Gaussian splats

### Capabilities:

- Physically Based Rendering (PBR) with accurate material shaders
- Global illumination for realistic lighting
- Dynamic shadows and reflective surfaces
- Volumetric lighting for fog, mist, and atmospheric effects
- Procedural terrain generation for landscapes
- Dynamic weather effects (e.g., rain, snow, sunlight variations)
- Support for animation-ready models with skeletal rigging
- Mesh and texture decoupling for advanced editing workflows
- Local 3D editing using structured latent space (e.g., resize or reshape specific parts)
- Real-time rendering preview with adjustable camera angles

### Texture Support

Maximum Texture Resolution: 16K

Supported Formats: PNG, JPEG, EXR, HDR

### Advanced Features:

- Normal maps, bump maps, and displacement maps
- Specular, metallic, and roughness maps
- Ambient occlusion for enhanced depth perception
- Support for multi-layered materials (e.g., glass with internal reflections)

### Enhancements

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Additional capabilities offered by Leonardo AI include:

- Style transfer using reference images to match artistic or photorealistic aesthetics
- Dynamic texture generation for handcrafted or AI-generated meshes
- Hierarchical resolution control to scale models for specific use cases
- Custom UV mapping options for precise texture alignment
- Integration with third-party software like Blender, Maya, or Unreal Engine

### Examples

#### Example Input:

Generate a futuristic sports car with glowing edges and a metallic finish.

#### Example Output:

High-resolution 3D model of a sports car with neon-glowing edges, metallic paint, and detailed textures, including tire treads and dashboard elements.

#### Example Input:

Create a medieval castle from a blueprint with weathered stone textures.

#### Example Output:

A detailed 3D model of a medieval castle featuring weathered stone textures, wooden doors, and flags waving in the wind.

#### Example Input:

Produce a NeRF representation of a dense jungle scene.

#### Example Output:

A volumetric NeRF of a dense jungle with layered foliage, mist effects, and dynamic lighting to simulate sunlight filtering through trees.

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### Example Input:

Design a sci-fi drone with rotating propellers and glowing panels.

### Example Output:

A rigged 3D model of a sci-fi drone with spinning propellers, glowing panels, and animated lighting for cinematic effects.

### Example Input:

Generate a low-poly desert landscape for a mobile game.

### Example Output:

Optimized 3D terrain with dunes, cacti, and a gradient skybox designed for real-time performance on mobile platforms.

## Limitations

Known limitations of Leonardo AI include:

- Maximum Poly Count: 10 million polygons
- Animation Support: Skeletal rigging supported but not animation authoring
- Environment Generation: Suitable for small to medium-scale scenes; large cityscapes require additional optimization

## Feedback

Users can provide feedback on generated models to improve quality. Feedback includes:

- Rating (1-5)
- Comments