

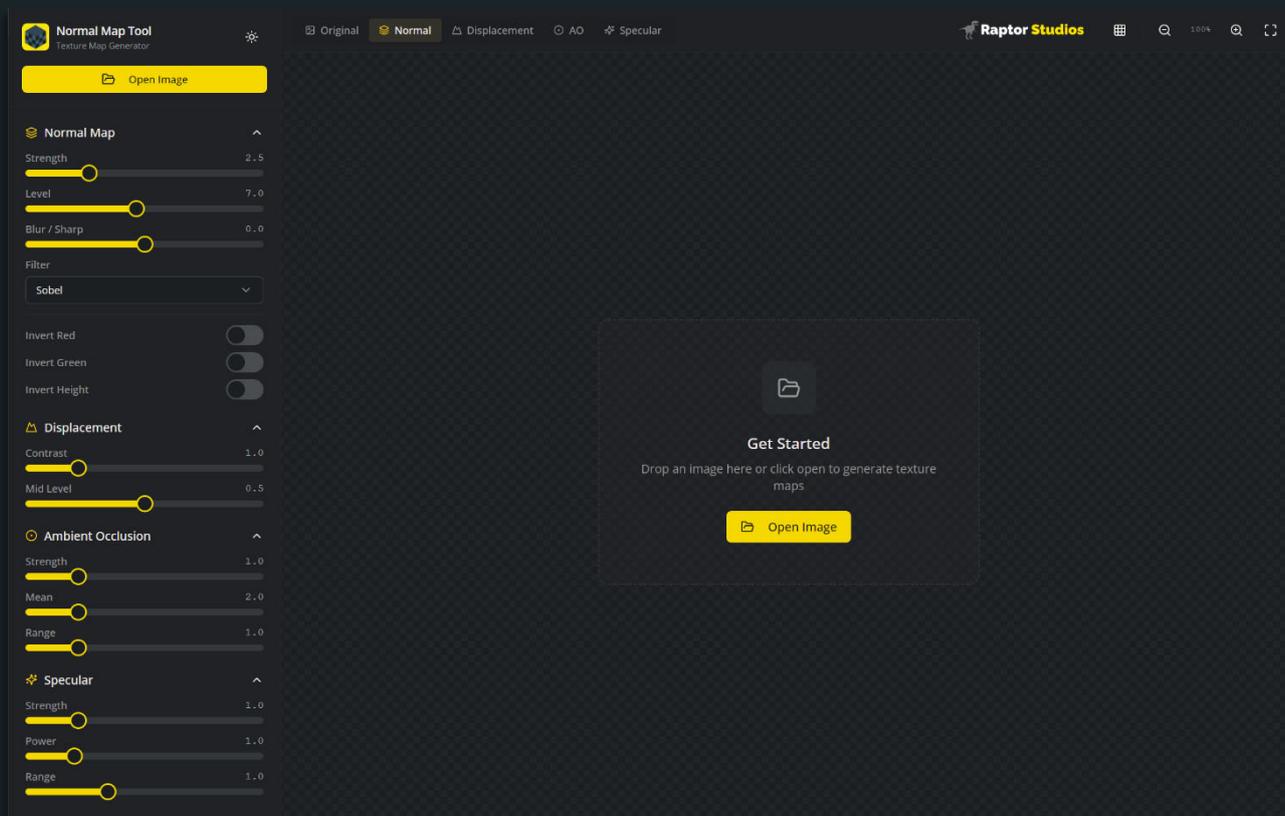


Raptor Studios



Normal Map Tool

User Manual



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Introduction

The Normal Map Tool is a real-time texture map generator developed by Raptor Studios. It allows artists, game developers, and designers to convert any source image into a full suite of physically-based rendering (PBR) texture maps without leaving a single lightweight application.

From a single diffuse or height-map image, the tool generates:

- **Normal Maps** — for simulating surface detail and lighting response
- **Displacement Maps** — for geometry offset and parallax effects
- **Ambient Occlusion (AO) Maps** — for soft shadow detail in crevices
- **Specular Maps** — for controlling surface reflectivity

Getting Started

System Requirements

- Operating System: Windows 10 or Windows 11 (64-bit)
- RAM: 4GB minimum, 8GB recommended
- Storage: 200MB free disk space
- Display: 1024x768 minimum resolution

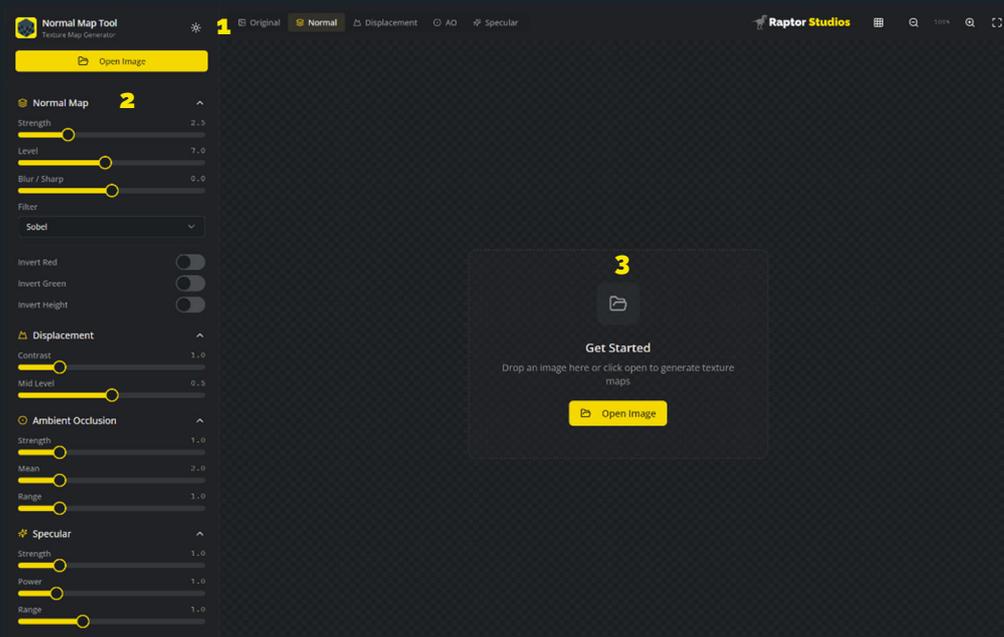
Installation

1. Extract the Raptor-Texture-Generator-Installer to your desired location
2. Double-click Launch-Installer-.exe to install the application
3. Once the Installer is complete, the app will be installed on your desktop

First Launch

When you first open the application, you'll see:

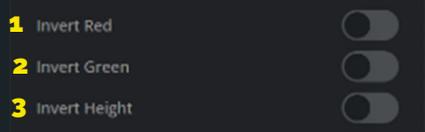
- 1 - Top Bar** Map type tabs (Original, Normal, Displacement, AO, Specular), zoom controls, and the Raptor Studios branding.
- 2 - Left Panel** All map generation settings, organised into collapsible sections for Normal Map, Displacement, Ambient Occlusion, and Specular.
- 3 - Viewport** The main preview area where the generated texture map is displayed in real time. Supports zoom, pan, and drag-and-drop.



Normal Map Controls



Parameter	Range	Description
1 - Strength	0 – 10	Overall intensity of surface detail. Higher = more pronounced bumps. <i>Default: 2.5</i>
2 - Level	0 – 10	Frequency detail level. Lower = broad shapes; higher = fine detail. <i>Default: 7.0</i>
3 - Blur / Sharp	-10 – 10	Pre-processing applied before generation. Negative blurs, positive sharpens, 0.0 = no effect. <i>Default: 0.0</i>
4 - Filter	Sobel / Scharr / Prewitt	Edge-detection kernel. Sobel is the recommended default.

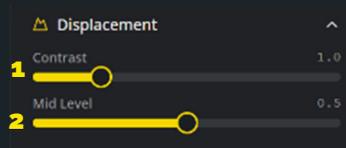


Channel Inversion

Toggle	Description
1 - Invert Red	Flips the X-axis (red channel). Use for left-handed X conventions.
2 - Invert Green	Flips the Y-axis (green channel). Toggle to switch between DirectX (+Y down) and OpenGL (+Y up) formats.
3 - Invert Height	Inverts luminance interpretation of the source — treats highlights as depressions and shadows as raised areas.

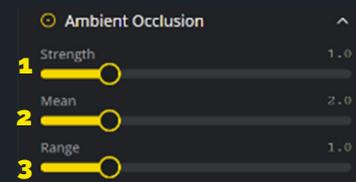
DirectX vs OpenGL: If the normal map looks "lit from the wrong direction," toggle **Invert Green** first — this resolves the most common engine-to-engine compatibility issue.

Displacement Map Controls



Parameter	Range	Description
1 - Contrast	0 – 5	Tonal contrast of the displacement map. Higher = more dramatic offsets. Default: 1.0
2 – Mid Level	0 – 1	Neutral grey point. Above 0.5 raises the overall surface; below 0.5 lowers it. Default: 0.5

Ambient Occlusion Controls



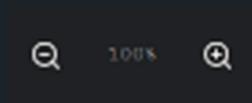
Parameter	Range	Description
1 – Strength	0 – 5	Intensity of the occlusion effect. Higher = darker crevices. <i>Default: 1.0</i>
2 – Mean	0 – 10	Average sampling radius. Higher = broader, softer occlusion. <i>Default: 2.0</i>
2 – Mean	0 – 5	Falloff distance of the occlusion — how sharply shadows fade at boundaries. <i>Default: 1.0</i>

Specular Map Controls



Parameter	Range	Description
1 - Strength	0 – 5	Base reflectivity intensity across the surface. <i>Default: 1.0</i>
2 - Power	0 – 10	Contrast of highlights. Higher = tighter, more metallic-looking highlights. <i>Default: 1.0</i>
3 - Range	0 – 5	Tonal range of the output. Adjust to match your target engine's specular slot. <i>Default: 1.0</i>

Viewport & Navigation



Zoom Controls (top-right toolbar): Zoom In (+), Zoom Out (-), 100% pixel view, Fit to viewport, and Grid icon to toggle tiled repeat preview. Use the tiled mode to check for seams on repeating surface textures.

Collapsing Sections: Click the chevron (^) beside any section header to collapse or expand it.

Exporting Your Maps

Switch to the desired map tab, then export. Recommended settings by engine:

Engine	Format	Invert Green	Recommended Filter
 Unreal	DirectX (+Y down)	On	Sobel
 Unity	OpenGL (+Y up)	Off	Sobel / Scharr
 Blender	OpenGL (+Y up)	Off	Scharr
 Godot	OpenGL (+Y up)	Off	Sobel

Workflow Tips & Best Practices

- Start with Strength at 1.0–2.5 and raise gradually. Overshooting creates unrealistically bumpy surfaces.
- Leave Blur/Sharp at 0.0 unless your source has noise. A slight negative value (-1.0 to -2.0) helps with photographic textures.
- Always check the tiled viewport before exporting to catch seam issues.
- Generate all four maps from the same source image in one session — do not re-crop or resize between exports.
- For large source images (above 4096×4096), work at 1024 or 2048 while setting sliders, then reload full resolution for the final export.

Glossary

Term	Definition
Normal Map	Texture storing surface orientation as RGB values, simulating fine detail without additional mesh geometry.
Displacement Map	Greyscale texture where brightness = physical height, used for vertex offset or parallax effects.
Ambient Occlusion	Approximation of how much ambient light reaches each surface point, producing contact shadows.
Specular Map	Greyscale or colour texture controlling surface reflectivity under direct lighting.
PBR	Physically Based Rendering — shading using measured physical material properties.
Sobel / Scharr / Prewitt	Edge-detection kernels that compute image gradients, the basis of normal map generation.
DirectX Normal	Normal map convention with +Y pointing downward (Unreal Engine, DirectX).
OpenGL Normal	Normal map convention with +Y pointing upward (Blender, Unity, OpenGL).
Height Map	Greyscale image where brightness = elevation. Source for both normal and displacement generation.
Tileable Texture	Texture designed to seamlessly repeat with no visible seams.

Support & Updates

Getting Help

If you encounter issues not covered in this manual:

1. Verify your system meets the minimum requirements
2. Try restarting the application
3. Contact Raptor Studios technical support at www.raptorstudios.co

Version History

- **v1.0.0:** Initial release with complete feature set
- All core functionality implemented and tested
- Professional desktop experience
- Custom branding and icon integration

Bug Reporting

- If you come across any bugs while using this tool, please fill out a bug report at <https://www.raptorstudios.co>

Legal Information

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