



Overview

SLUG is a software library that performs complex text layout and renders beautiful resolution-independent glyphs with the graphics hardware. It is intended to be used by a wide variety of applications for all of their text rendering needs, which may include drawing graphical user interfaces and placing text inside a 3D world or virtual environment. Slug can also render general vector graphics using the same technology.

SLUG gets its name from the history of typography. A “slug” is what typesetters used to call a full line of text cast as one piece of hot lead by a Linotype machine.



SLUG is rendering the text shown in the 2D overlay as well as the text that is embedded in the 3D scene.

Dynamic GPU Font Rendering

SLUG renders character glyphs and icons on the GPU directly from outline data composed of quadratic Bézier curves to produce crisp text at any scale or from any perspective. SLUG uses our exclusive mathematical algorithm to achieve perfect robustness with high performance. The following list highlights some of the features of the rendering system.

- Multicolor emoji rendering.
- Geometric glyph outline effect.
- Dynamic bounding polygon dilation for arbitrary transforms.
- Adaptive supersampling for extreme minification.
- Optimizations for large font sizes.
- Strong optical weight option.



Advanced Text Layout

SLUG provides a large number of typographical capabilities that include extensive support for OpenType features.

- Scale, offset, stretch, and skew transforms.
- Tracking and kerning adjustments.
- Ligature substitution (standard, discretionary, and historical).
- Glyph composition (includes skin tones and ZWJ sequences).
- Combining diacritic mark placement.
- Stylistic and historical alternates.
- Small capitals and titling capitals.
- Case-sensitive alternate forms.
- Tabular and proportional figures.
- Lining and old-style figures.
- Subscripts and superscripts (transform and glyph based).
- Ordinals and scientific inferiors.
- Fractions (numerator, denominator, and slash substitution).
- Underline and strikethrough decorations.
- Paragraph alignment, line breaking, and indentation.
- Embedded format directives.

Language Support

SLUG supports the complete range of Unicode characters and works with strings encoded as UTF-8.

Right-to-left scripts are fully supported, and SLUG can perform bidirectional text layout. Cursive joining is supported with automatic selection of initial, medial, and final forms.

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Compatibility

The SLUG C++ library is platform agnostic and can be run on any modern operating system, including Windows, Mac, Linux, iOS, Android, and consoles. It makes no external function calls, and it does not allocate memory.

SLUG works with Direct3D (version 10 or later), OpenGL (version 3.3 or later), OpenGL ES (version 3.0 or later), Vulkan, Metal, and WebGL2. The shaders can be compiled without modification for HLSL, GLSL, Metal SL, and PSSL (PlayStation).