

Spoopy Environment Planner



Introduction

Spoopy Environment (Spoopy Envi. for short) is a surface-level, lightweight framework designed to simplify game development, similar to Kore from Kode. However, unlike Kore, it serves as a higher abstraction layer.

Inspiration

The structure and original inspiration, and still is the main inspiration, for this framework is HaxeFlixel. I've used HaxeFlixel for a couple of years now, publishing my first game, "Dinomite," and making a couple of mods for a certain rhythm game. I really like the feel and how simple and well-structured the framework is, and I wanted to create one that isn't limited to Haxe and also provides more low-level control.



When it comes to the style of code, format, and interior structure, I took heavy inspiration from Taisei, a Touhou fan game, because of how I found the project to use the best strategies when using the C language. It's shown in the source that they really know what they are doing and have a lot of experience when it comes to development. My goal is to mimic their style in a way I can comprehend it and expand and maybe even improve on it. That's why the framework's source is almost identical or, maybe by now, has hints.

Perk Badges

Like a CS student getting accepted to Carnegie Mellon University, this badge signifies immense pride because it demonstrates that the task was unrealistic to complete in one week, which realistically should have taken about a month or so. If this badge is earned, just like the logo, you have every right to brag about it in a CMU essay; you deserve it! If they reject the application, they smoke a whole ounce of cocaine.

Status of CMU Badge

- Left Version Signifies: **Pending**
- Right Version Signifies: **Failed**

Rewriting a framework from the ground up (again) is an incredibly long and tedious process that 99% of the time takes more than a week. So! It's a huge achievement when you pull this off in a week! If this badge is earned, you have every right to "brag" about it in an essay, but probably don't straight-up brag about it, as they'll most likely reject the application.

Status of Sokol Badge

- Left Version Signifies: **Pending**
- Right Version Signifies: **Failed**



Development Timeline (Beta 0.1)


Due before HoloJam #8 (Basically one year)

Design alongside Video Editor + Musonite (aka. Dinomite 2.0)

Post every progress update starting from assignment #4

Each task (except Dreamcast) must be finished every week, unless a badge signifies otherwise

If people ACTUALLY enjoy your content, you must post a video for every task completed (shorts are qualifiable)

| # | Assignment | Type | Status | Start Date | End Date | Notes |
|--|---|-------------|-------------|-------------|------------|--|
| | Add threading support | Design ▾ | Completed ▾ | Jul 11, ... | Jul 18,... | What you're literally doing right now with meson and C |
| | Debugging First Testing with Spooky Threading | Debug ▾ | Completed ▾ | Jul 19, ... | Jul 19,... | Used Claude AI |
| | Receive Permission | N/A ▾ | Completed ▾ | Jul 16, ... | Jul 20,... | For Dreamcast support from Ross |
| | Configure Kore with Meson + Make Wrappers | Design ▾ | Completed ▾ | Jul 20, ... | Jul 22,... | Supports MacOS (basic spooky_graphics.a with C) |
| | Set up Slang (for MacOS) | Design ▾ | Completed ▾ | Jul 31, ... | Aug 7,... | |
| | Configure Slang for a second attempt | Design ▾ | Completed ▾ | Aug 9, ... | Aug 1... | |
| | Attend the VCHC meeting on ZOOM | N/A ▾ | Completed ▾ | Aug 5, ... | Aug 5,... | At 11 am |
|  | Triangle Prototype + It Runs! | All Above ▾ | Completed ▾ | Jul 23, ... | Sep 1... | This includes spooky_graphics with Clang test on macOS |

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|---|--|-------------|---------------|-------------|-----------|--|
| | Make a README, <u>then</u> post a short with brainrot on TikTok, Shorts | | Completed ▾ | Oct 12, ... | Oct 12... | Ask for help and have others review the video, to then give the green light |
| | Dreamcast Support | Design ▾ | Post Poned ▾ | Aug 25,... | 📅 Date | Make sure Ross approves of this (Wait til Haxe 5.0 to make this call) |
| | Enhance Spoopy's memory using <code>mimalloc</code> | Enhance ▾ | Completed ▾ | Dec 8, ... | Dec 1... | Construct a span allocator as well (use it with the texture case) |
| 🔧 | Remove Kore v2 in favor of Sokol (Needs custom NSView) | Design ▾ | In Progress ▾ | Dec 16,... | 📅 Date | Discontinue `renderer/` as a static library, but instead be part of the <code>DLL</code> |
| | Implement all Taisei Tests | All Above ▾ | In Progress ▾ | Jan 16,... | 📅 Date | `TODO (All Tests)` |
| | Optimize elements of the implementation | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | `TODO (Base Optimize)` |
| | Replace the JS scripts with Rhai and make a custom Rust Project CLI (includes custom make) | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | The Rust Project CLI must let Meson run Rhai scripts flawlessly and name it `environment.` (Remove Makefile) |
| | Rewrite the main <code>meson build</code> to have it be managed by the custom Rust project | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Design the framework layout in Rust (use iocrafts) | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Use Lime OpenFL as the reference. + Implement from `TODO (Framework)` |
| | Make a fast-paced, short, and full-length video documentary about Rust and Rhai | N/A ▾ | Not Started ▾ | 📅 Date | 📅 Date | Must be about how you decided to use Rust with Rhai when first starting Spoopy Envi. |

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| | Implement Kore v3 like Samples, not including multi-window | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | Alongside the “This” ‘TODO (Samples)’ |
| | Create a Tech Demo of “Itsudemo I love you” - Kasane Teto, using Raymarcing | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Must post <u>multiple</u> shorts, a full Inigo Quilez-like video on the math to complete this task |
| | Lower Drawcall Usage if possible | Debug ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Implement an option to disable the runtime slang shader compilation | Enhance ▾ Debug ▾ | Not Started ▾ | 📅 Date | 📅 Date | Cut the source files out of compilation as well. <u>However</u> , this option can be overwritten when in DEBUG |
| | Heavily rewrite Slang to better support profiles and remove BX to use the custom Spooky components | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | ‘TODO (Slang)’ |
| | Start Developing Musonite (macOS only for now) Goal: Main gameplay mirrors the original | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | Minimum <u>14 MB Heap Capacity</u> and <u>76k VRam</u> Allowed to continue once the mirror is complete |
| | Have WebGPU + Add Emscripten Support | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | WebGPU renderer is separate from Kore2 |
| | Make both Emscripten and WebGPU compilable on every OS | Debug ▾ Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Implement Windows support for Spooky | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | <u>Test Cases</u> for tests + samples universally | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | except WebGPU |
| | Implement Test Cases for the WebGPU | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |

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| | platform | | | | | |
| | Add States | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Like HaxeFlixel. `TODO (States)` |
| | Implement a sample that uses States | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | Use HaxeFlixel tests as Ref |
| | Add LuaJIT scripting support (spoopy_scripts.a) | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Have it be a wrapped sub-API |
| | Rewrite Musonite to have scripting support | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Have spoopy_ui.a program in Rust using Taffy | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Required by the options and the death menu of Musonite |
| | Have spoopy_audio.a, which uses OpenAL | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Must be finished with the overall renderer for Musonite and in need of audio |
| | Make Sound Engine for Musonite | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | Minimum 14 MB Heap Capacity, 76 KB VRam + all supported platforms |
| | Separate the Updater to have a Render Thread and a Fixed Update Thread | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Have that version script be compatible and able to warn the user if their Spoopy is outdated | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Finish up Musonite! | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.1.0 (On Release) |
| | Make a kick ass website for Spoopy (Ask Eddie for help) | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.1.0 (On Release): Host it with a custom domain |
| | Have the spoopy repo on GitHub be mirrored from the website | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.1.0 (On Release) |

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|--|---|----------|---------------|-------------|----------|--|
| | Develop the first HoloJam Spooky game! | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.1.0 (On Release): Most importantly, however, <i>have fun!</i> |
| | Publish framework on Homebrew, Scoop, and NPM | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.1.0 (On Release) |
| | Implement universal multi-window/multi-view wport rendering support | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.0: 'TODO (Multi-Window).' |
| | Have kmake Meson Exporter (Includes removing JSON) | After ▾ | Completed ▾ | Jul 30, ... | Sep 1... | 0.2.0: Must have successfully pushed to Kore to pass |
| | Have Linux Support | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.0 |
| | Very Basic Editor UI template to showcase real-time shader loading (ImGui + TweenS) | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.0: Basically just shaders and other basics that editors need that can be exported to .scene |
| | Crapton of language support | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.0: Haxe, Rust, etc. |
| | Have a docs/contributions.md | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.0: Rules, <u>like</u> : "log the last commit to a language binding in the BINDINGS.md." |
| | Design AI terrain renderer through 2D plane with 3D projection (for 4D) | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.0 Demo Project: Best to do this after transferring and while in an ML class |

Development Timeline (Full Release 0.2.5)

Design alongside “Spoopy’s Content Loader“ for a custom Pokémon game

| # | Assignment | Type | Status | Start Date | End Date | Notes |
|---|--|-------------|---------------|------------|----------|---|
| | Add Hscript scripting support. | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Add 3DS support | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | Needs money \$200 |
| | Implement a High-level Marching Cubes API | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Optimize the Marching Cubes API for performance and speed | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | Add to AngelScript's Engine Layer |
| | Embed Haxe into the main engine via HashLink and injectively optimize HashLink | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | This is for making in-engine menus |
| | Move necessary components from the Rust CLI app of Spoopy to a dynamic library called: spoopy_launcher | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | Most likely will include the Rhai framework and not include the iocrafts directly, but just the design logic |
| | Have Haxe with HL use the spoopy_launcher dynamic library | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Integrate a “project launcher menu,” like other big game engines like Unity, Godot, etc. | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Mainly a UI version of the CLI. However, this does mean that we have to separate Spoopy projects into two: embedded and dynamic |

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|--|--|-------------------------|---------------|--------|--------|---|
| | Design the high-level Application around the Ever-Changing game integrate in Spooky | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | This begins the official code structure of Ever-Changing (Basically no 2D to keep the focus) |
| | Have Embedded Projects be like how Musonite was made | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | Optional Haxe support via the language support of 0.2.0, but mainly C |
| | Dynamic Project will have at least one window that is used to display what the user wrote in their scripts | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | Must not have any editor UI; this is just a blank window when nothing is written (Can be the same window as the launcher) |
| | By this point your confused about the Dynamic Project design: Recall how you want to design Ever Changing | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | Don't forget that dynamic projects are basically how modern FNF handles mods and do need a <u>manifest.json</u> |
| | Have a separate tab, inspired by Roblox, that is just a catalog for imported dynamic projects | Enhance ▾ Optional ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Full Ass Model and Animation Support | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Optimize Full Ass Model and Animation Support | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Design built-in global Illumination as a "package." | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Add to Hscript's Layer |
| | Optimize built-in global Illumination | Enhance ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | For Dynamic Projects, create an | After ▾ | Not Started ▾ | 📅 Date | 📅 Date | 0.2.6: Difference is that this is optional if |

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| | export button for games | | | | | you want your dynamic project not be a mod of Spooky, essentially, but exported as a standalone game |
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Development Timeline (Full Release 1.0-nightly)

| # | Assignment | Type | Status | Start Date | End Date | Notes |
|---|---|------------------------|---------------|------------|----------|---|
| | Implement Raytraced Audio | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Have Desmos 3D UI for Editor that loads bones and meshes (Programmed in Haxe) | Design ▾ | Not Started ▾ | 📅 Date | 📅 Date | Have “section models” that are folders of folders to clean up the UI (aka. Models with bones) |
| | If there is an audience , have plugin support for Desmos-like a UI for other engines because of Haxe | Design ▾ Optional ▾ | Not Started ▾ | 📅 Date | 📅 Date | This includes Godot, Unreal, Heaps, and Unity for your “fans” to use |
| | Design a 4D renderer | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | |
| | Finish the First Full Chapter of Ever Changing and release it on Steam | All Above ▾ | Not Started ▾ | 📅 Date | 📅 Date | |