Non-Photorealistic Rendering in WebGPU

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Mojank 2: Electric Boogaloo

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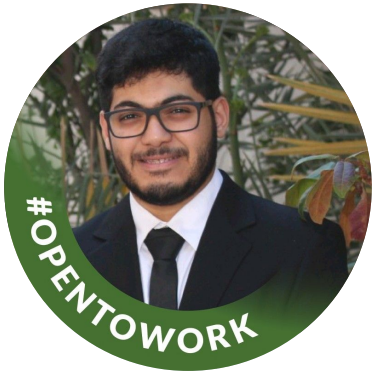

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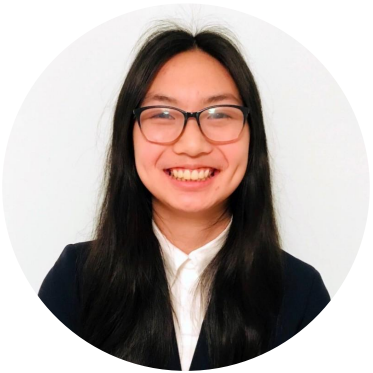

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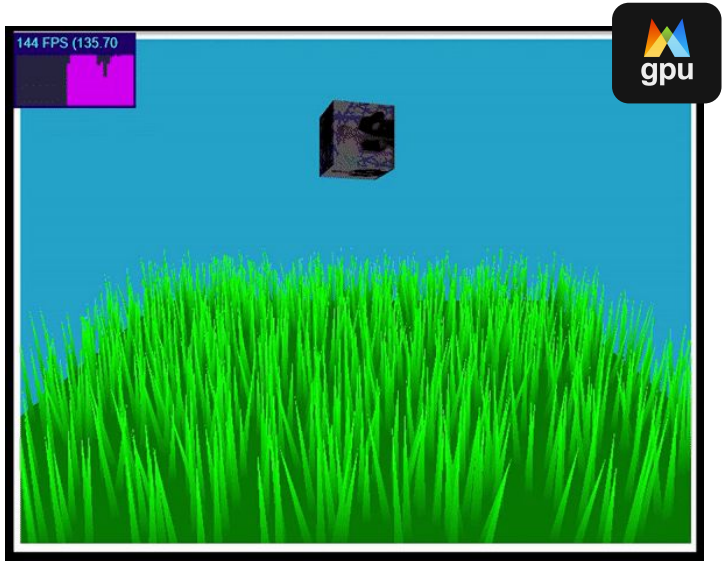
Overview

Non-photorealistic render in WebGPU

- Implement **rendering** toolkit in WebGPU to display the desired scene with Genshin's specific artstyle
- Create a basic **interactive** scene
- Enrichen the WebGPU **compute** shader usage ecosystem
- **Display** the open access assets from Genshin Impact

Inspiration



Current Build

Rendering

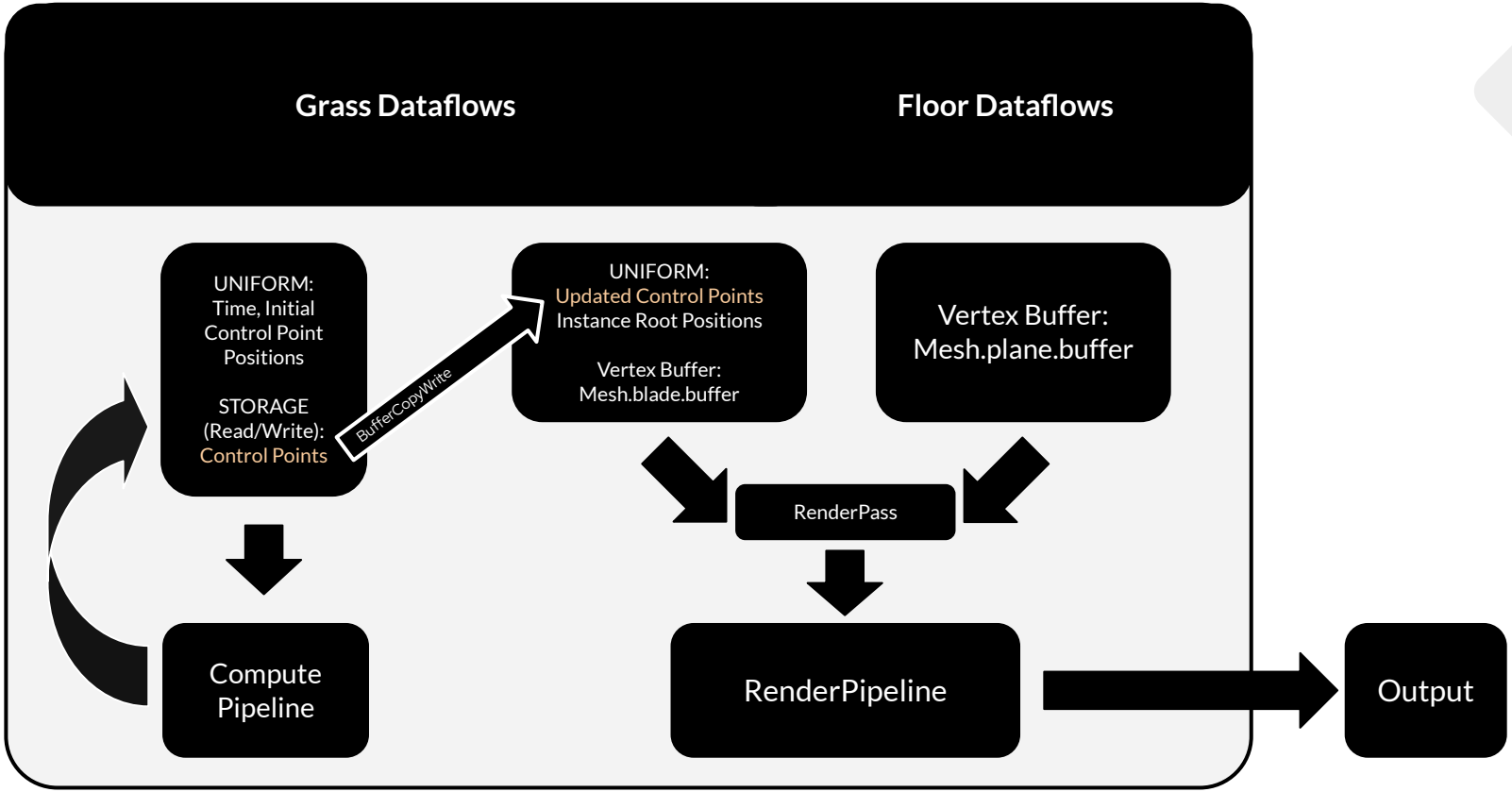
UV Texture Functionality

Lambertian Lighting Model

Interactivity

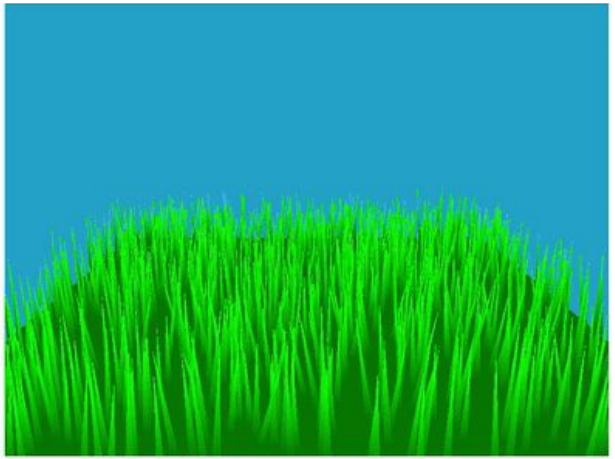
Interactive Camera, Textured Mesh, and Toon Shading

Compute Utilization



WebGPU Grass Implementation Comparison

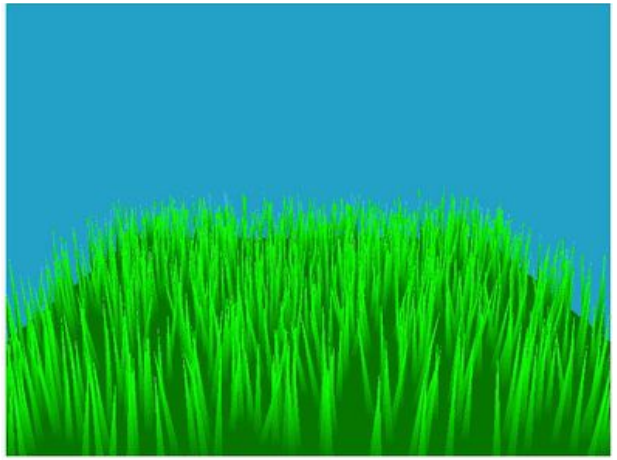
WebGPULab



Ours

Genshin vs WebGPU Grass

Genshin Impact



Ours

Future Scope

(Project Still in Progress..)

Rendering

- Material Specific Toon Shading

Interactivity

- Integrated Interactive Camera
- Ambient Soundscape

Compute

- Compute Shader Clouds
- Open-Ended Compute Pipeline for Third-Party Modification

Display

- Loading of Arbitrary Geometry
- Skybox

A Brief Demo

https://webgpu-impact.vercel.app/

*Chrome Canary Required

References

WebGPU Lab Project - https://webgpulab.xbdev.net/

WebGPU Samples - Austin-Eng - https://austin-eng.com/webgpu-samples/

Jahrmann, Klemens, and Michael Wimmer. "Responsive real-time grass rendering for general 3d scenes." *Proceedings of the 21st ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*. 2017.

Ayers, Ben. “Blender NPR: Recreating the Genshin Impact Shader” *Making Of / ArtStation* 2021.

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Appendix

Further Optimizations