Portfolio

Andrei Egorov

Here you will see some of my artworks created at CGSG(Computer Graphics Support Group) of St.Petersburg PML 30 since 2021 study year. Some of them are team projects, some are independent. Most of code is written in C/C++ on Windows.

My GitHub page

TMP(Tough Megapolis Planner)

Urban environment design system - team project (8 people).

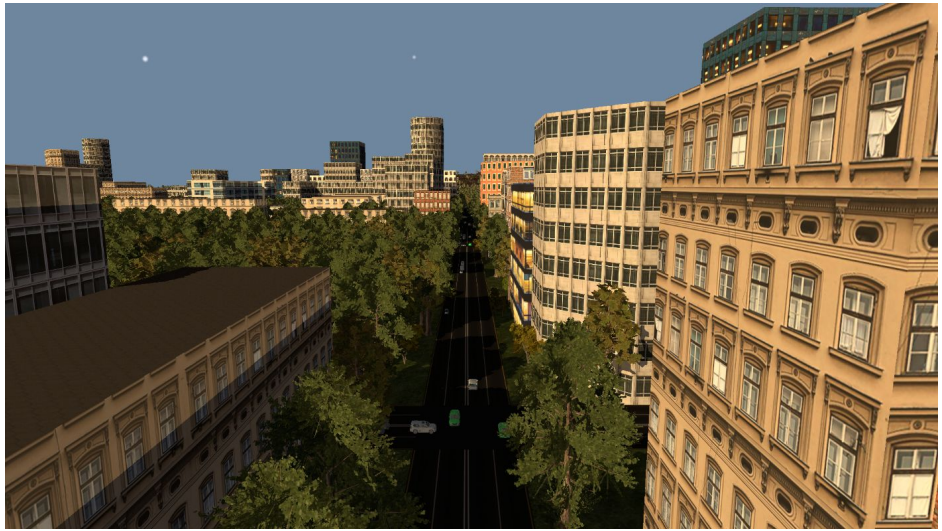
My part: user interface(2nd gen), building system.

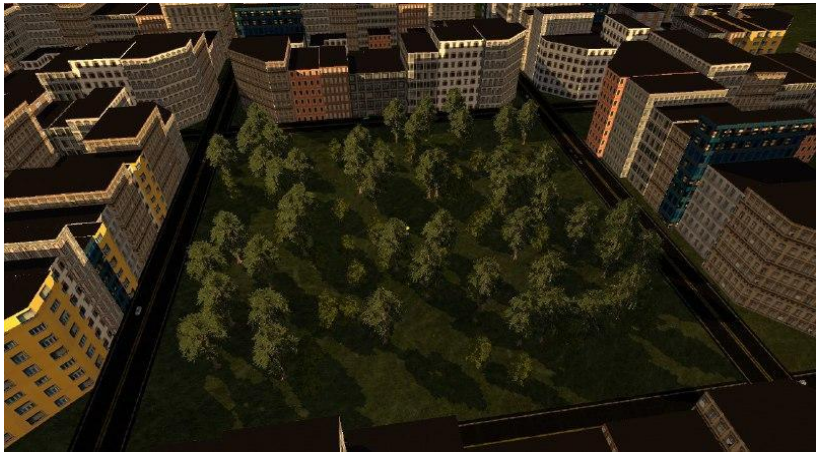
Main features:

- multi-thread render core on Vulkan API.
- road system and traffic simulation.
- landscape system that uses Perlin noise and erosion algorithms. To speed up the landscape drawing we used adaptive tessellation.
- second degree award at 23rd Kolmogorov Readings.

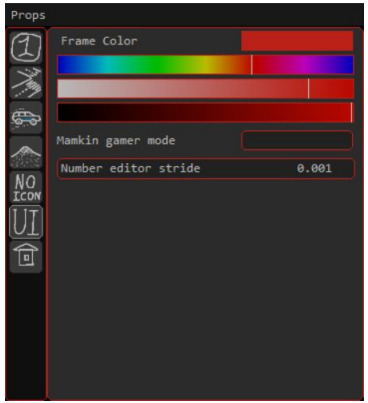
Presentation

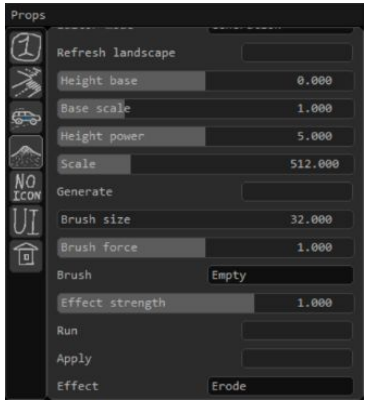
(C++, WinAPI, Vulkan API) 2022-23





2nd gen UI:





TER(Tough Environment Redactor)

System for modeling and visualization of the environment in rea time - team project (13 people).

My part: user interface(1st gen), UBO/SSBO buffers, compute shaders usage

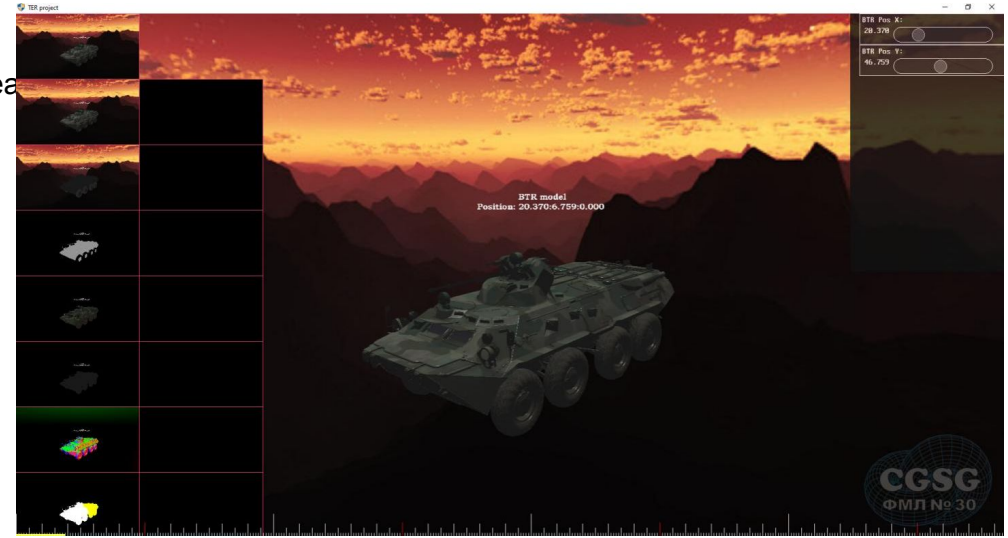
Main features:

- GPU accelerated OpenGL render core.
- unit system.
- matrix calculating at compute shaders.

Presentation

Video presentation(Russian)

(C, WinAPI, OpenGL) 2021-22



User Interface(3rd gen)

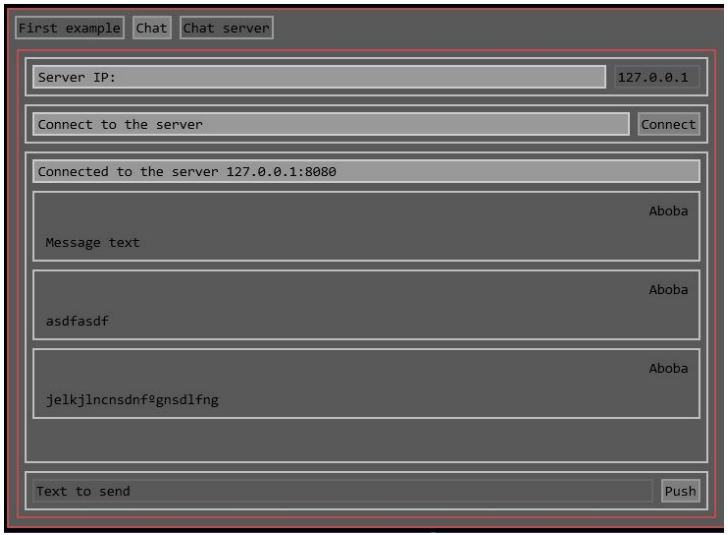
Main features:

- advanced resize system.
- deferred render.
- draw functions of simple objects are accelerated by assembler.
- element redraws only if it has changed, so by default UI doesn't influence on performance.

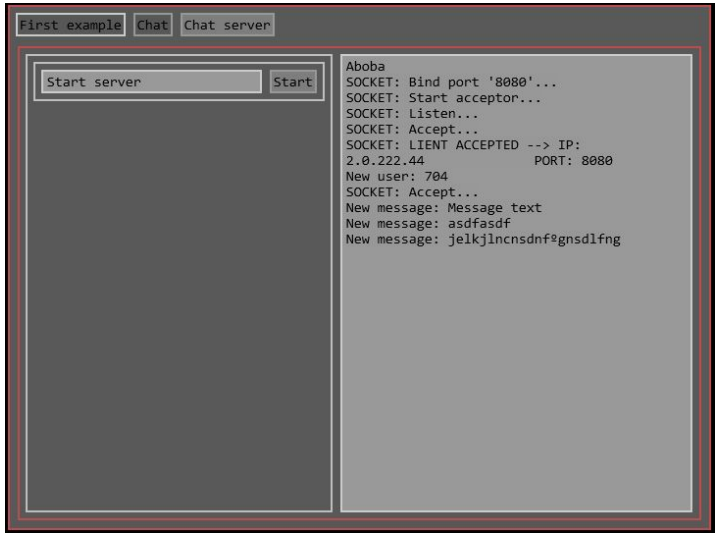
(C, WinAPI, OpenGL) 2023-34

Win socket client-server messenger example:

Client:



Server:



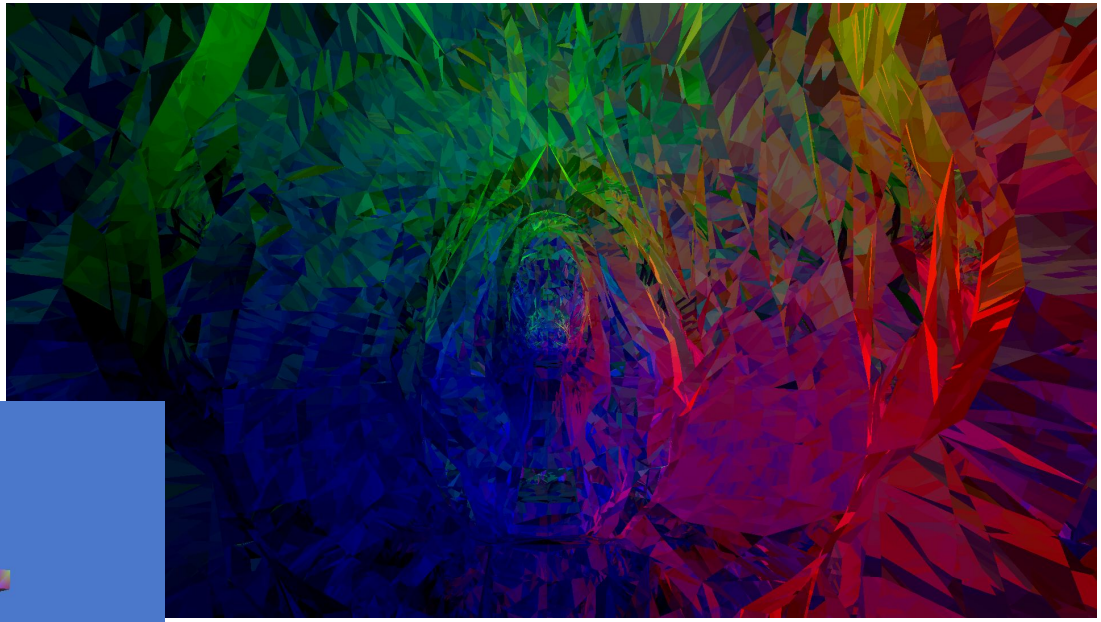
RTX

Render core based on Vulkan API that uses GPU accelerated ray tracing algorithm.

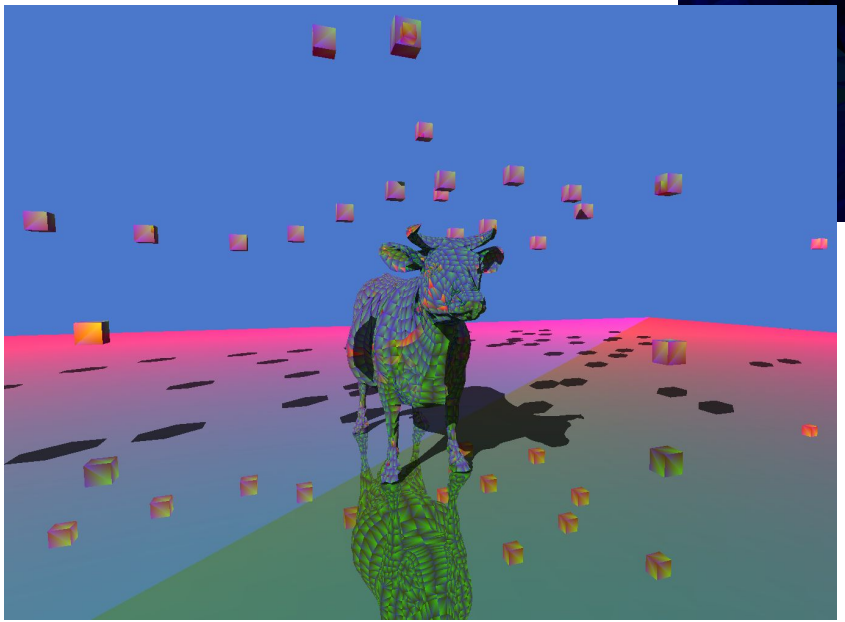
Main features:

- Realistic render with reflections and shadows
- Real time rendering

(C++, WinAPI, Vulkan API) Summer 2023



Inside cow(example of 3 level recursive reflections; FPS: ~60)



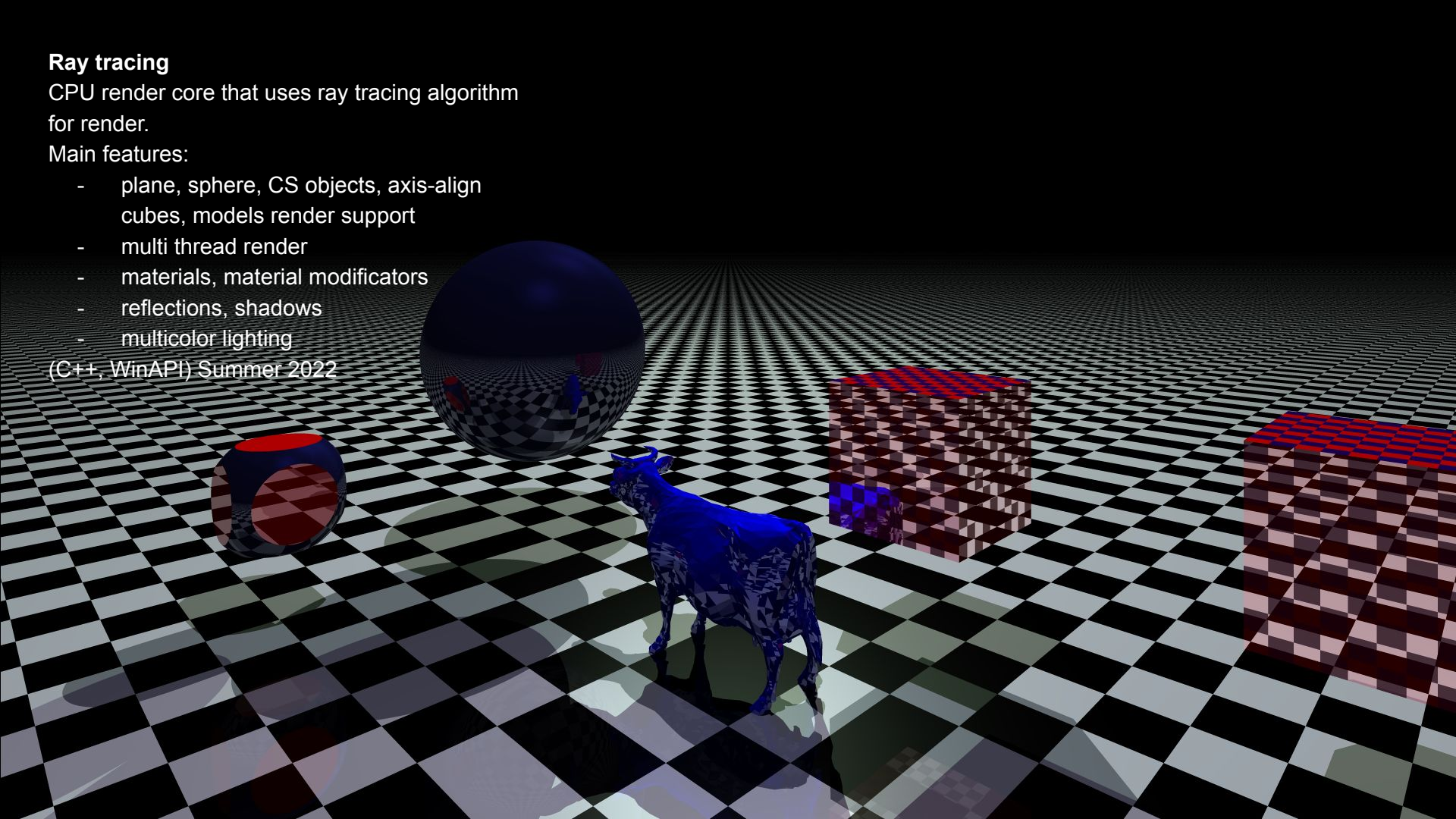
Ray tracing

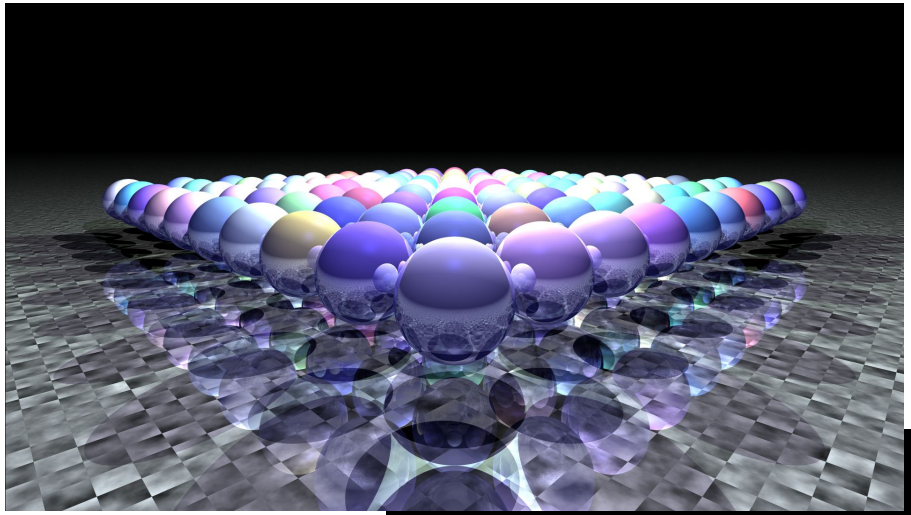
CPU render core that uses ray tracing algorithm for render.

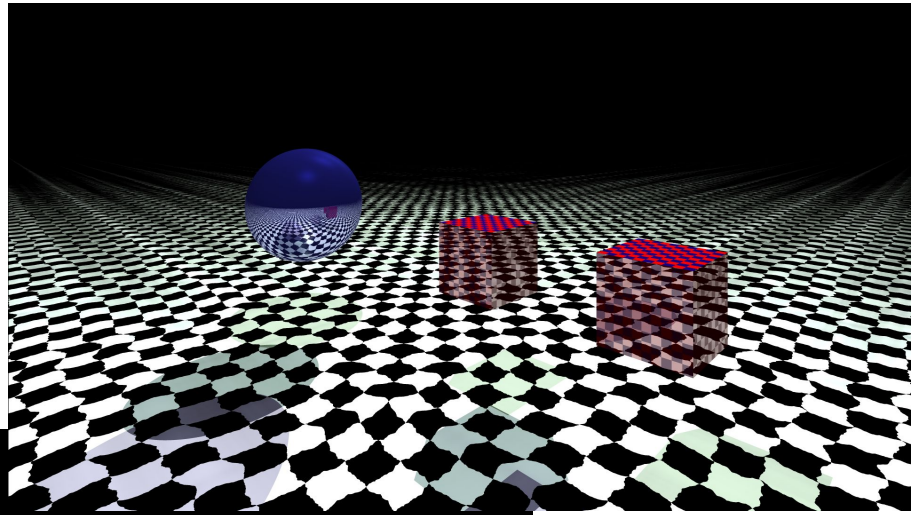
Main features:

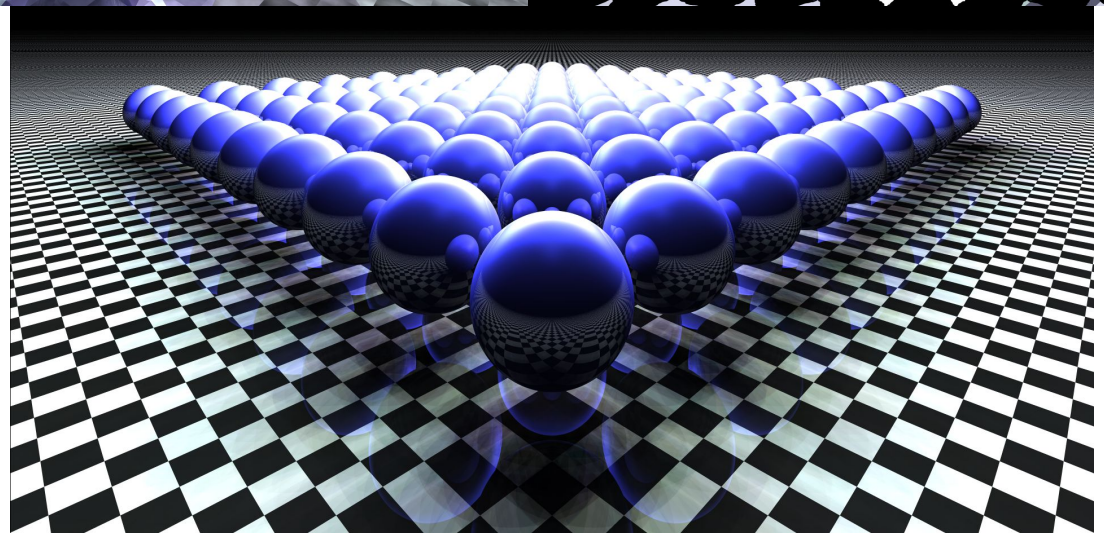
- plane, sphere, CS objects, axis-align cubes, models render support
- multi thread render
- materials, material modificators
- reflections, shadows
- multicolor lighting

(C++, WinAPI) Summer 2022









Fractals

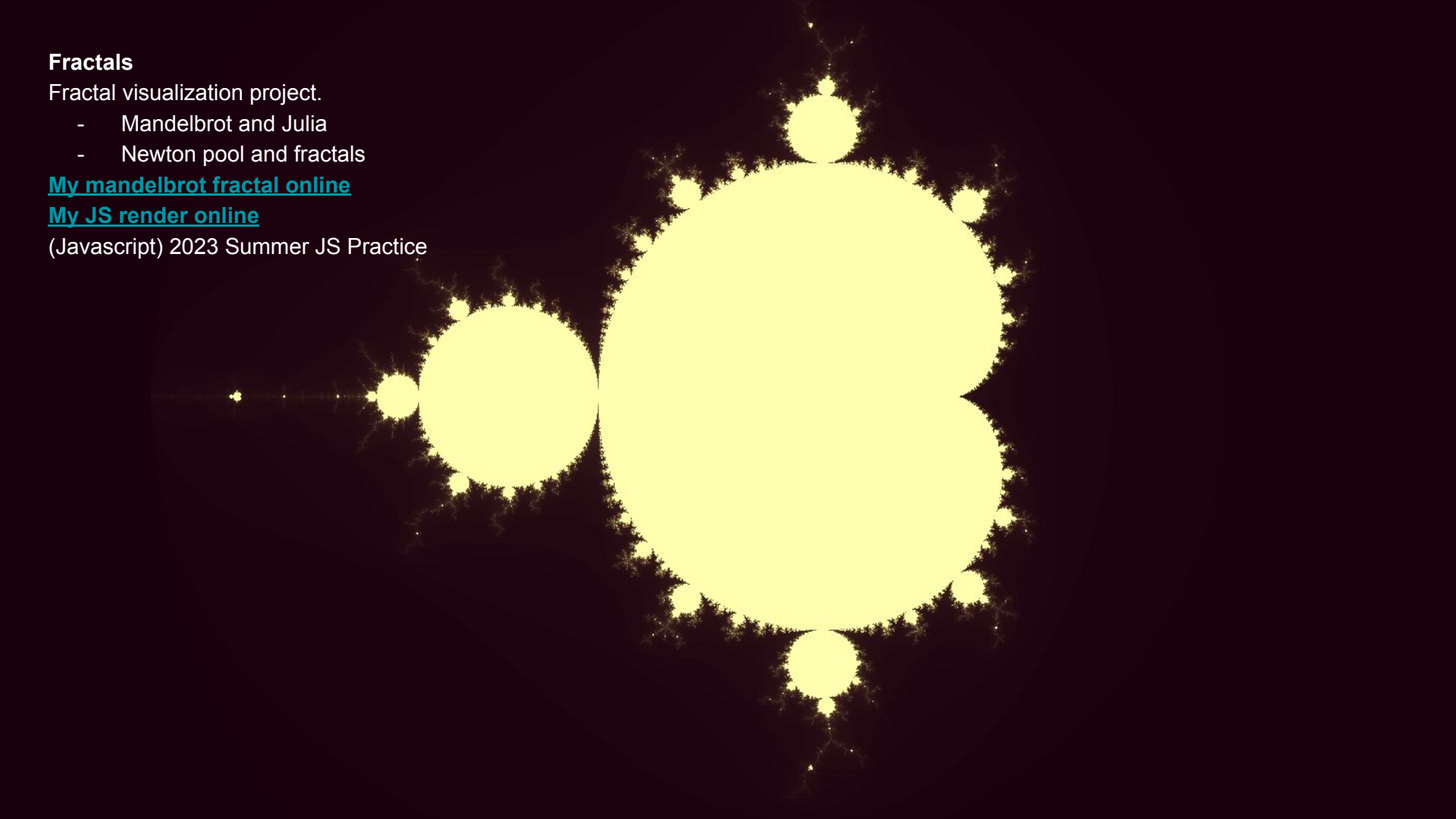
Fractal visualization project.

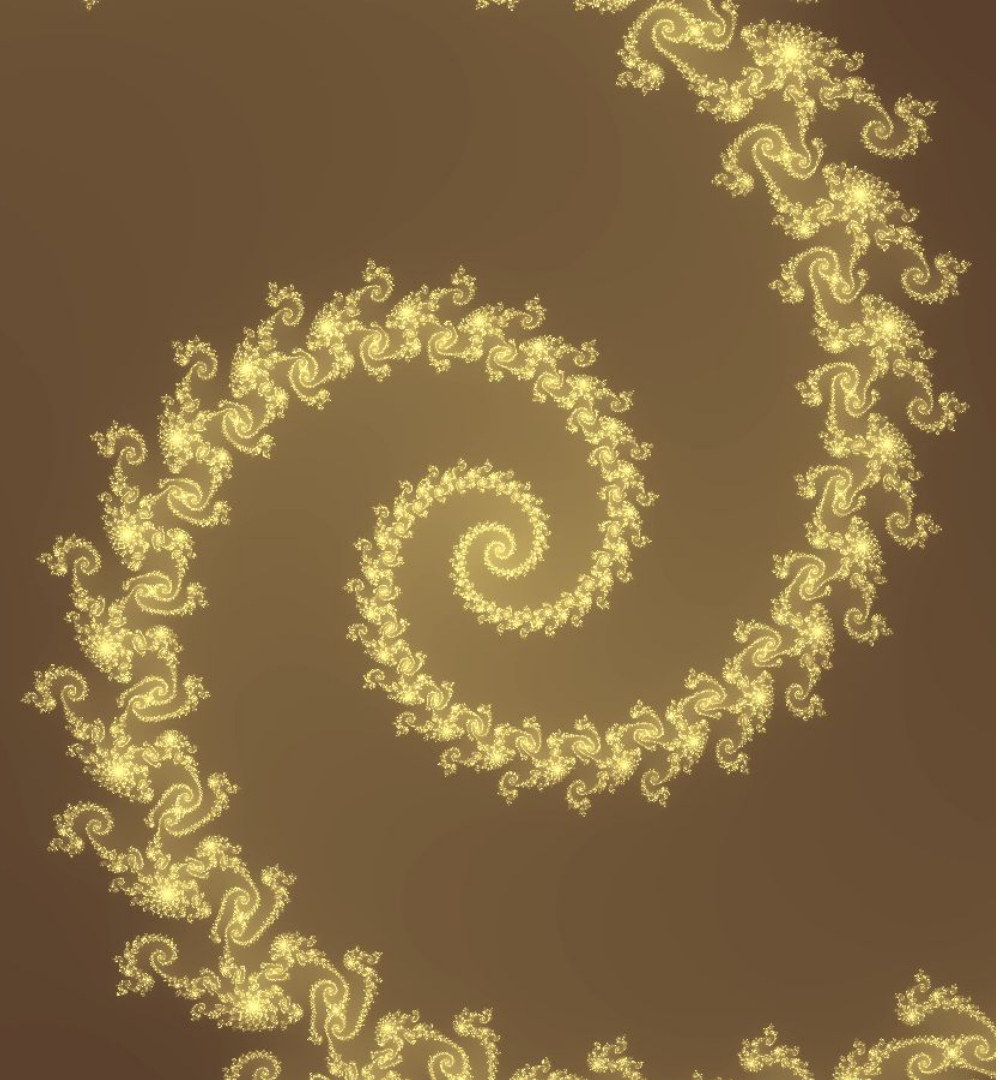
- Mandelbrot and Julia
- Newton pool and fractals

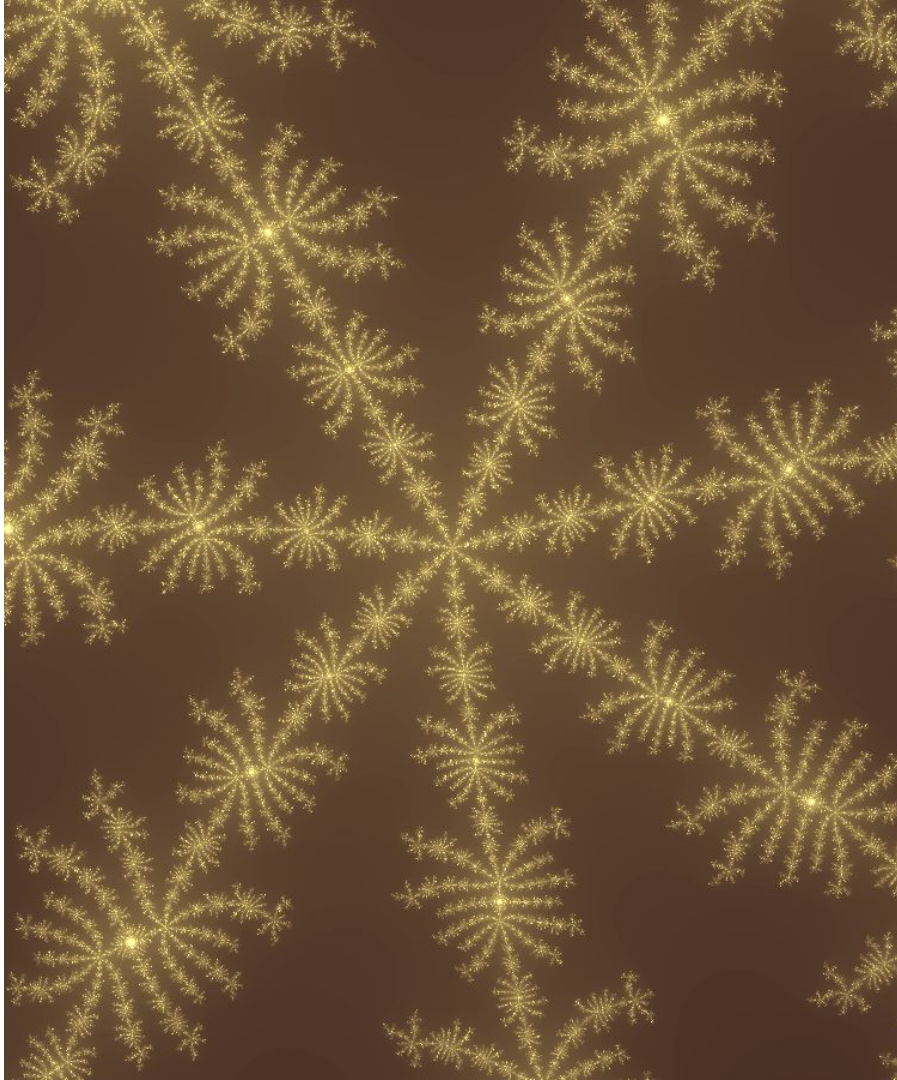
My mandelbrot fractal online

My JS render online

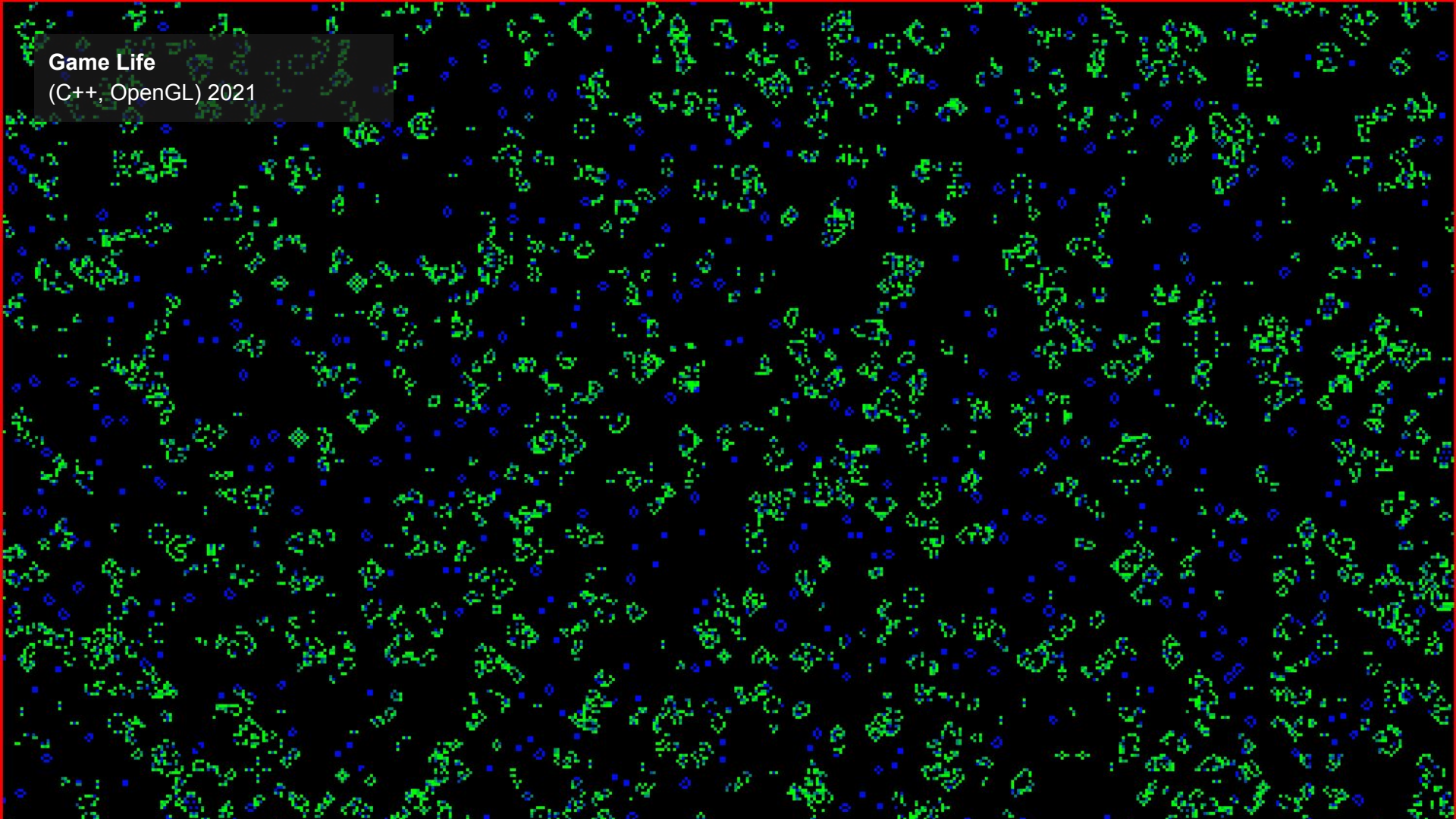
(Javascript) 2023 Summer JS Practice







Newton sinus fractal
(C++) Summer 2022


Game Life
(C++, OpenGL) 2021