Yu Feiran (余 斐然)

Male 24 years old (May 1999) Place of Origin: Fujian, China

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Education

2022.09 – Present	South China University of Technology	Computer Science - Computer Graphics	Master
2017.09 - 2021.07	Northeastern University	Computer Science - IoT GPA: Top 30%	Undergraduate

Project Experience

Champion of the 4th CSIG Image and Graphics Technology Challenge [Team Leader, Main Member]

- The competition sponsored by AMD China focuses on ray tracing and rendering optimization. This competition requires the implementation of a hardware-accelerated ray tracing renderer using Vulkan, reading gltf2.0 format and using PBR rendering. As the main team member, I worked with my teammates to implement the main program and independently implemented denoising algorithms, depth of field effects, and some interactive functions. We won the championship in the competition. After the competition, I added the rasterization part and implemented features such as deferred rendering pipeline, multi-light source shadows, SSAO, SSR, and Physical-Based-Bloom.

Ray tracing

Rasterization

GitHub Documentation Award Certificate

Design and Implementation of a UNIX-like Operating System based on the MIPS instruction set [Completed independently]

- From digital circuit design to MIPS assembly to C language to UNIX operating system, I have implemented a basic but fully functional computer system.

  1. The CPU, referring to "自己动手写 CPU（Designing a CPU in Hand）" book, implements all instructions of MIPS32 release 1 with a five-stage pipeline and incorporates a TLB module by Verilog.
  2. Designed and implemented peripheral devices including VGA display module, DDR2 RAM, SPI FLASH, and PS/2 keyboard;
  3. The operating system is based on the MIT6.828 Fall 2020 course and has completed all labs with a perfect score;

  This project is a summer camp project of Loongson, and it is an **excellent graduation design of Northeast University**.

GitHub Video

Implementation of C subset grammar compiler and virtual machine [team leader, main developer]

- Implement a C subset grammar compiler that supports functions and recursion, has basic input/output functions, and can compile into assembly instructions, ultimately supporting execution in the virtual machine. Main reference is "Compiler Construction: Principles and Practice". Excellent project for undergraduate compiler theory course.

GitHub

Skills

- Proficient with C++, familiar Python
- Knowledge of computer graphics, familiar with Vulkan, proficient in Unreal Engine and Unity Engine, developed small-scale 2D game engines and software rasterizers
- Understanding of computer architecture, familiar with MIPS instruction set, knowledge of Unix operating system, implemented a subset of C compiler

Language Proficiency

English: Passed CET4/CET6, able to read computer-related English literature and books.