Qiu-han Gu

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Education

Nanjing University, Nanjing, China **Sept.2020 – Present**
Bachelor of Science in Computer Science and Technology *GPA: 4.23/5*
Coursework: *Rendering(100/100), Introduction to Computer Graphics(86.9/100), Software Quality Assurance(97/100), Software Engineering(94/100), Software Engineering: Comprehensive Experiments(95/100), Developing Intelligent Apps on iOS(97.2/100)*

Research Interests

Computer Graphics, Software Engineering and Machine Learning.

Publication

LLM-Based Code Generation Method for Golang Compiler Testing
Independent First Author Accepted by ESEC/FSE Conference 2023

Research Experiences

Content-Adapted Image Super-resolution Based on Random Scale **May.2023 – Present**
Image Super-resolution, 3-person team, supervisor: Assistant researcher Dr. Jie Guo *MCG in Nanjing University*

- Trying to devise a novel comprehensive scheme based on self-attention machanism to integrate scene adaptation, resolution adaptation and content adaptation to boost efficiency and robustness of image super-resolution.
- Developing the study around the neural network and trying to realize the image super-resolution based on random scale with kernel prediction.
- Spark the keen interest to conduct a more in-depth study in the field of image rendering and image super-resolution.

LLM-Based Code Generation Method for Golang Compiler Testing **Sept.2022 – June.2023**
Compiler Testing, 2-person team, supervisor: Assistant researcher Dr. Yu Wang *SEG in Nanjing University*

- Implemented a LLM-based high-quality code generation method to the Golang compiler, generating test-cases with 3.38% average coverage and only 2.79% of them had syntax errors.
- Utilized Python and Pytorch to finetune the large model CodeT5 to generate go code testcases both qualitatively and quantitatively.
- Published a paper as the independent first author at ESEC/FSE Conference 2023, LLM-Based Code Generation Method for Golang Compiler Testing.
- Kept on exploring the software testing technique and improving the performance of program analysis by machine learning.

Automatic Detection of Intracranial Aneurysms Based on Deep Learning **May.2022 – Apr.2023**
Object Detection, 8-person team, First prize in the national competition (1/154) *Nanjing University*

- Utilized Python and Pytorch to perform a clinically applicable deep-learning model for detecting intracranial aneurysm in computed tomography angiography images.
- Set an online website for medical institutions to apply the model conveniently.
- Focused on back-end development and improved the manipulation of Java web.
- Designed a complete business plan for project implementation.

Development of A Physically Based Renderer using Monte Carlo Path Tracing **Mar.2022 – June.2022**
Rendering, Independent project, supervisor: Assistant researcher Dr. Jie Guo *Nanjing University*

- Utilized C++ to realize the Monte Carlo Path Tracing algorithm, estabishing a "easy to deploy and develop" rendering platform.
- Realized BVH, Octree accelerator, multiple importance sampling, Gaussian filtering and bilateral filtering, and integrated Intel Open Image Denoise.

Skills

Programming: C, C++, Python, Java, Go, Linux, Pytorch, MySQL
Language: Chinese(Native), English(Fluent)

Honors & Awards

- National College Student Bussiness Plan Contest, The 1st Prize in China, Mar.2023(10%)
- National Scholarship of Undergraduate, Dec.2021($< 1\%$)