

# Jiawei Fang

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Southern University of Science and Technology  
Department of Computer Science and Engineering  
1088, Xueyuan Blvd, Nanshan District  
Shenzhen, Guangdong, China

fangjw2021@mail.sustech.edu.cn  
github.com/IskXCr  
Phone: (+86) 133 7253 8930

## Education

**Southern University of Science and Technology**  
B.A., Computer Science and Technology, Expected June 2025  
**Honored Degree, Turing Class**  
**Cumulative GPA:** 3.87/4.00      **Ranking:** 13/183  
Specific grades for major courses are provided at the end.

## Research Interest

Computer Graphics, Computer Vision, Robotics  
*Rendering, Physical Simulation, Geometry Processing*

## Research and Projects from 2021 to 2023

**OpenCV DNN Vulkan Backend Development**  
This is an ongoing group project as part of degree requirement.  
Supervised by Prof. Shiqi Yu.  
(This is not Bachelor's dissertation.)

*Unless otherwise specified, all projects below are implemented **by myself**.*

### **CG-Course-Misc**

<https://github.com/IskXCr/CG-Course-Misc>

This is an ongoing project.

**My implementation of assignments and projects from various CG courses.** They currently include real-time rendering (rasterization, PCF, PCSS, etc.), offline rendering (path tracing, SAH, ...), implementation of various BRDFs (fresnel reflection, transmission, etc.), material models (microfacet), physical simulation (spring-mass) and geometric processing (Bezier-Curve interpolation). Expected projects (single-person) in 2023 Fall include 3D Position Based Fluid Simulation, Physical Simulation for Melting a Rabbit, Stochastic Progressive Photon Mapping.

### **CG-Note-Misc**

<https://github.com/IskXCr/CG-Note-Misc>

This is an ongoing project.

Notes for various CG courses I have been studying. Detailed explanation and formula derivation, written in L<sup>A</sup>T<sub>E</sub>X by me, are available in the given link. Currently working on GAMES-202, High-Quality Real-Time Rendering. Aside from courses in this list, I have been studying other CG textbooks, including but not limited to *PBRT* and *Real-Time Rendering*.

### **Path Tracer Toy**

<https://github.com/IskXCr/RayTracingToys>

Offline renderers implemented during freshman year based on *Ray Tracing in One Weekend*.

### **CARP Problem Project**

[https://github.com/IskXCr/CS311\\_CARP\\_Solver](https://github.com/IskXCr/CS311_CARP_Solver)

Solving the Capacitated Arc Routing problem by implementing an memetic algorithms with hybrid metaheuristic from a famous paper.

### **Single-Cycle MIPS CPU Design, Video Encoding, Playback and VGA Driver**

<https://github.com/IskXCr/CS202-CS214-Computer-Organization-Project> (130/100) Implementing the basic instructions of MIPS32, a VGA text mode driver and a series of video encoding/decoding utility in Python/MIPS Assembly for video playback. SystemVerilog, MIPS and Python.

### **Simplified BC Calculator**

<https://github.com/IskXCr/CS205-Project-2-Calculator>

(92+/100) A simplified implementation of GNU BC that supports variable assignments and high-precision arithmetic, along with other useful routines.

### **GitHub Data Visualization**

<https://github.com/IskXCr/CS209A-Project-Data-Visualization>

(100/100) A web demo written from scratch that uses Vue.js/SpringBoot as frontend/backend. Fetches real-time data from GitHub's REST API in a server, and delivers the resulting visualization as a web-page to front.

### **Flappy Bird on FPGA**

<https://github.com/IskXCr/CS211-Project-Flappy-Bird>

(100/100) A flappy bird game running at 1080p@60Hz with everything written from scratch in SystemVerilog only.

### **Reversi Game**

<https://github.com/IskXCr/CS102A-Project-Reversi>

(120/100) A reversi game written in JavaFX. Modern GUI and ELO ranking system, with minimax-based AI opponent. In collaboration with another student: I designed the GUI, animation, and interfaces.

Awards and  
Fellowships

**International Mathematical Contest In Modeling,  
Honorable Mention**

July, 2023

Course Name	Score	Letter Grade
Operating System (H)	90	A-
Algorithm Design and Analysis (H)	92	A-
Computer Organization and Architecture (H)	99	A+
Probability and Statistics	97	A+
Computer Networks	93	A
Data Structure and Algorithm Analysis (H)	93	A
Discrete Mathematics (H)	84	B
C++ Programming	90	A-
Principles of Database Systems (H)	94	A
Digital Logic (H)	98	A+
General Physics II	94	A
Calculus II	96	A
Computer System Design and Applications A	100	A+
General Physics I	97	A+
Linear Algebra A	87	B+
Calculus I	89	B+
Introduction to Computer Programming A (Java)	96	A
Introduction to Computer Science A	96	A

Figure 1: My grades of important courses

**Outstanding Student Award, Secondary Prize**

October, 2022

**Outstanding Freshman Scholarship**

October, 2021

**Languages and Skills** Chinese Mandarin (native), English (TOEFL 107, R30—L25—S25—W27)  
**C, Cpp**, Java,  $\LaTeX$ , Python, JavaScript/HTML, Verilog/SystemVerilog, MIPS Assembly, PostgreSQL

**References** *Click the name for link to profile pages*

Prof. Shiqi Yu  
 Department of Computer Science and Engineering  
 Southern University of Science and Technology  
 yusq@sustech.edu.cn