Kairui Shi

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Jiang'an District, Wuhan City, Hubei Province, China

Education

Wuhan University (WHU), Wuhan, China 09/2021 - Present
Bachelor of Engineering in Remote Sensing and Information Engineering (expected in Jul 2025)
GPA (major): **3.86/4.0,** GPA (overall): **3.76/4.0**, ranking: **2/34**
Core Courses: Advanced Mathematics (100/100), Object-Oriented Programming (96/100), Probability and Mathematical Statistics (95/100), Error Processing of Spatial Data (96/100), Computer Vision and Pattern Recognition (92/100)

Research Experiences

SkyEarth, Wuhan University | Team Leader 04/2023 - Present
NeRF-Based Method for Virtual-Reality Fusion Scene Reconstruction
Advisor: Yongjun Zhang (Professor, Dean of the School of Remote Sensing and Information Engineering)

- Innovated theories and ideas in integrating the rendering perspective of NeRF with the viewpoint of LoD1 model.
- Resolved the challenge of texture expression in large-scale scenes under LoD1 low-level models combined with NeRF and achieved stable and instant texture rendering.
- Identified issues related to mesh grid generation in large-scale volume rendering of scenes.
- Developed an interface for interacting with three-dimensional scenes and integrated the program into the laboratory-developed comprehensive 3D model processing software, Lidarpro.

Artificial Intelligence and Machine Perception, Wuhan University | Research Assistant 11/2023 - Present
High-Speed NeRF in Large-Scale Scenes with Compression
Advisor: Professor Zhenzhong Chen, Associate Research Fellow Wanjie Sun

- Interpreted and analyzed quantitative large-scale rendering city scenes.
- Created theories and ideas in compressing the data with feature dimensionality reduction and model pruning.
- Proposed a factorization of 3D volumes in large scale in order to achieve both quality and speed.
- Addressed the challenge of feature representation in large-scale scenarios where the vertical scale is significantly smaller than the horizontal scale.

Project Experiences

Remote Sensing Image Clustering Parallel Analysis Project 09/2023 - 11/2023

- Designed a program and implemented data parallelism with PySpark.
- Conducted a rapid analysis of remote sensing image clustering and assessed a parallel strategy to address the challenges associated with clustering large-scale RS images.

Aerial Triangulation Algorithm Design 10/2023 - 12/2023

- Developed a program for the automatic computation of camera intrinsic and extrinsic parameters, along with the measurement of ground point coordinates.

Air Quality Prediction and Warning Model 11/2022 - 08/ 2023

- Proposed mixed methods for air quality data analysis and improved prediction accuracy.
- Led the team to participate in the College Student Mathematical Modeling Challenge and got 2nd (top 10%) prize.

Leadership & Activities

Wuhan University Student Union, WHU | Member 08/2021 - 09/2022

- Designed and organized various activities and professional seminars for WHU students.
- Established "Future Academy" courses to cultivate professional skills for WHU students.

The 9th China Youth Innovation and Entrepreneurship Competition | Outstanding Volunteer 08/2022

College Students' innovation and Entrepreneurship Competition | Team Leader 06/2023

Awards

- Second Class Scholarship in Wuhan University (top 10%)
  2023
- 2nd prize in the 15th "Huazhong Cup" College Student Mathematical Modeling Challenge (top 10%)
  2023
- 3rd prize in the 14th Chinese Mathematics Competitions
  2023
- 3rd prize in 2023 Contemporary Undergraduate Mathematical Contest in Modeling
  2023
- 3rd prize in National College Students' Language and Writing Skills Competition
  2021
- 2nd prize in the 2nd "BETT Cup" National College Students' English Vocabulary Competition
  2023

Skills

Programming Languages: Adept in C/C++, Python, Matlab, R
Tools: vim, git, cmake, gcc, Latex
10 years of programming and engineering experience: solid expertise in C (>150k lines), C++, Python, R, and various algorithms and data structures)