

# Liang Qifan

Tel: +86-13693191713 | E-mail: liangqifan@whu.edu.cn | Github: <https://github.com/Simon-leong>

## EDUCATION

### Wuhan University(WHU)

*Bachelor of Engineering in Computer Science and Technology*

Wuhan, Hubei, China

Sept. 2021-Jun. 2025(Expected)

- **GPA:** 3.88/4.00 (91.63/100)

## RESEARCH EXPERIENCE

### Machine Learning in Facial Recognition, Autonomous Driving, and Image Processing

Jan. 2024-Present

*Member- Advisor: Prof. Jens Rittscher, University of Oxford*

- Studying deep learning and machine learning applications in computer vision, focusing on feature extraction, segmentation, and visual motion analysis.
- Collaboratively researching specific problems, developing solutions, assessing algorithm performance, and preparing for academic publication.
- Anticipating to achieve a research practice certificate from the professor, and to submit and publish a paper at international conferences or journals.

### Medical Video Desmoking Research Integrating Semantic Segmentation and Cross-Attention Fusion

Dec. 2023-Present

*Research Assistant-Advisor: Prof. Han Zhen, National Engineering Research Center for Multimedia Software, WHU*

- Specializing in video desmoking for surgical environments, enhancing endoscopic video processing with spatio-temporal attention.
- Independently developing a 3D rendering dataset and a novel desmoking algorithm combining smoke segmentation with cross-attention.
- Anticipating to submit and present findings in a CCF-A-level international conference paper as the first author.

### Few-shot Face Sketch-to-Photo Synthesis via Global-Local Asymmetric Image-to-Image Translation

May. 2023-Dec. 2023

*Research Assistant-Advisor: Prof. Han Zhen, National Engineering Research Center for Multimedia Software, WHU*

- Authored English papers on image-to-image translation, specifically in few-shot learning, image fusion, and style transfer.
- Contributed to developing a three-stage asymmetric neural network training strategy for solving information scarcity in few-shot contexts.
- Conducted bi-weekly laboratory reports, focusing on data analysis, literature review, and model optimization.

### Study on Forest Fire Diffusion Method Based on Cellular Automata

Dec. 2022-Jul. 2023

*Research Assistant-Advisor: Prof. Sun Kaimin, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, WHU*

- Led research on multi-source forest fire spread prediction algorithms, developing a hexagonal honeycomb cell-based flame spread direction prediction method.
- Contributed to algorithm coding and experimental validation, gaining experience in paper writing and structural organization.

## PROJECT EXPERIENCE

### All-Weather Monitoring System for Power Transmission Towers Using Thermal Infrared Technology

Oct. 2023-Present

*Team Leader*

- Engaging in feature matching research for power transmission tower monitoring scenes.
- Aiming at accurate feature matching in infrared video sequences to improve the precision of sway and displacement monitoring of power transmission towers. Currently in the model fitting stage.
- Successfully won the **national-level** project in the national innovation and entrepreneurship training program for college students, and was selected as the key project of national innovation with **the first place(top 0.043%)**.

### Multi-Source Perception and Intelligent Prediction Emergency Monitoring Platform for Forest Fires

Oct. 2022-Aug. 2023

*Team Leader*

- Led the development of an intelligent monitoring system for field fire situations, liaising with forestry bureaus and emergency command centers to tailor requirements and optimize platform development.
- Directed software system development of the project, encompassing architecture setup, logic organization, technical development, competition defense, and documentation.
- Received **National Second Prize (top 0.7%)** in 2023 Chinese Collegiate Computing Competition, **National First Prize** in 2023 China "Dingxin Cup" National Youth Innovation and Entrepreneurship Competition, and **National Grand Prize** in 2023 National University Student Surveying and Mapping Discipline Intelligence Competition.

### Research on Style Transfer Algorithms in Chinese Pattern Art

Jun. 2022-May 2023

*Core Member*

- Engaged in research on "Style Transfer Algorithms" for Chinese patterns, leading software app development and assisting in technical analysis and data processing.

- Received **National Second Prize (top 0.4%)** in 2023 C4-Network Technology Challenge and **Provincial Second Prize** in 2023 National College Digital Art & Design Awards.

## PUBLICATIONS

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- Y. Li, **Q. Liang** et al. “Few-shot face sketch-to-photo synthesis via global-local asymmetric image-to-image translation.” *ACM Transactions on Multimedia Computing, Communications, and Applications*.
- T. Zhang, Q. Meng, J. Liu, **Q. Liang**. “Study on Forest Fire Diffusion Method Based on Cellular Automata.” *2023 30<sup>th</sup> International Conference on Geoinformatics*.
- **Q. Liang** et al. “Method for Smoke Removal in Fire Images Based on Improved Cycle-Dehaze Neural Network.” *Chinese Invention Patent*.
- J. Liu, **Q. Liang** et al. “Method for UAV Swarm Trajectory Planning with Emphasis on Forest Fire Edges.” *Chinese Invention Patent*.
- **Q. Liang**. “Innovative Integrated Platform for Emergency Monitoring of Forest Fires,” *Chinese Software Copyright*.

## HONORS

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- WHU Samsung Group Outstanding Undergraduate Scholarship (2023, **Top 0.5%**)
- WHU First-Class Scholarship (2023, **Top 5%**) , WHU Outstanding Student Award (2023, **Top 5%**)

## SKILLS & OTHERS

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**Programming Languages:** C++, C, Python, Javascript, TypeScript, SQL, CSS, HTML, Verilog

**Course Certificate:** Huawei Course Certified ICT Associate (HCIA) - Big Data, Huawei Certified ICT Professional (HCIP)-AI-MindSpore Developer Engineer

**Language:** Mandarin (Native), Cantonese (Native), English (Proficient)

**Research Interests:** Fundamentals and applications of deep learning algorithms, including explorations for human-centric visual perception, 2D to 3D scene transformation, and video understanding, particularly in the applications of autonomous driving and medical image/video processing.