

梁睿軒
Ray Liang



PROFILE SUMMARY

Optimistic and focused person with strong communication and teamwork skills. With **2.5 years of SSD firmware development experience**, skilled in solving complex problems and proposing innovative ideas, and known for being conscientious and responsible.

CONTACT DETAILS

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PERSONAL INFORMATION

Citizenship: **Taiwan**
Residence: **Banqiao, New Taipei**
Family: **Single**
Languages: **Chinese, English**

SKILLS

- C/C++
- Python
- Shell script
- Git
- Communication and team collaboration

HOBBIES

- Rock climbing
- diving
- Mountaineering
- woodworking
- pottery
- 3D printing
- CNC

EXPERIENCE

RD SSD Firmware Engineer at SSSTC (Hsinchu). 2022.01–2024.06

◇ FTL Algorithm Development and Optimization:

1. Responsible for the design, implementation, validation, and performance tuning of the NAND Flash Translation Layer (FTL).
2. Analyzed and resolved complex technical issues encountered during FTL operation to ensure data integrity and system stability.

◇ Redesigned TRIM Architecture:

1. Developed a new architecture to address the challenge of inaccurate Namespace Utilization (NUSE) calculations.
2. Integrated DMAC hardware to accelerate NUSE computation, achieving a **50×** performance improvement.
3. Ensured protection against unexpected power loss (SPOR) and reconstruction at the next power up.
4. Effectively reduced the write amplification caused by TRIM operations.

◇ Garbage Collection (GC) Performance Tuning and Optimization:

1. Applied concepts from automated control to balance write and GC resource allocation.
2. Improved the distribution of valid data across NAND, reducing the variation of write speed to below **5%**.
3. Adjusted hot/cold data ratios to increase steady-state write throughput by **20%**.

◇ NVMe Features

1. Contributed to the development of NVMe ancillary features, such as SMART information implementation.

◇ Multi core Environment:

1. Performed firmware development for multi core processor environments.

◇ Testing and Validation:

1. Authored test scripts (e.g., Linux shell scripts, Fio) to verify firmware functionality and performance.

EDUCATION

MASTER OF MECHANICAL ENGINEERING. *from National Chiao Tung University (NCTU).* **2019–2021**

BACHELOR OF MECHANICAL ENGINEERING. *National Chung Hsing University.* **2014–2019**

ACHIEVEMENTS

◇ 2022 HIWIN THESIS AWARD, **First Prize.**

◇ 2021 TSPE RESEARCH PROJECT AND PAPER COMPETITION, **Second Prize.**