

Liu Tianyi

SHANGHAI · PLATFORM DEVELOPMENT / SYSTEM SOFTWARE ENGINEER

+8619931133797 | i@terry.ee | liutianyi.dev | github.com/ltycn

Profile

5+ years of system-level software engineering, with a long focus on the test infrastructure, system diagnostics, performance & power analysis, and automated delivery around **Windows drivers**. Well-versed in the validation and release flow of **Display / Graphics / Power** driver modules, with hands-on experience root-causing complex system issues via a tool-chain of **ETW/ETL Trace, MSR/MMIO performance counters, dumps, symbols, and benchmarks**.

Led **WHQL certification and Windows Update release** of 10+ drivers, and designed and shipped from 0 to 1 a **CI/CD automation pipeline** spanning build, validation, certification, and release — compressing driver delivery from hours of manual work to minute-level automation, a **90%+ efficiency gain**. Experienced in analysis and collaboration across drivers, firmware, OS, and hardware platforms, working in deep communication with **Intel / Microsoft / Apple** engineering teams to jointly root-cause and resolve system-level problems.

More recently, I fuse system-diagnosis with AI engineering — designing and building a **BSOD intelligent-diagnosis Agent platform** on a Skills + Loop, task-driven paradigm that combines dump parsing, symbol engineering, an internal issue-management system, and an AI Agent to **auto-infer crash root cause**, classify, and accumulate it as knowledge. Comfortable across a multi-language stack (**C++ / C# / Python / Go**), skilled at building highly reliable automation platforms, debugging infrastructure, and data-analysis tools for engineering teams.

Experience

Shanghai Bizsmooth Co., Ltd. (on-site at Lenovo)

Shanghai, China

SYSTEM SOFTWARE ENGINEER (TEST INFRASTRUCTURE & SYSTEM DIAGNOSTICS)

Nov. 2022 – Present

- **Driver debugging & system-diagnosis infrastructure:** For Windows driver problems, owned deep analysis and engineered diagnosis of complex issues (BSOD, system anomalies, performance regressions). Designed and built from 0 to 1 a BSOD intelligent-diagnosis Agent, fusing dump parsing, symbol engineering, an internal issue-management platform, and an AI Agent to auto-infer root cause and classify issues — cutting average localization time per issue by 80% and settling historical conclusions into reusable knowledge assets.
- **Display / Graphics / Power driver validation & debugging:** As technical lead and core member of the Display / Graphics / Power modules on the consumer PC line, drove system-level analysis, driver validation, and mass-production support for models such as Yoga and ThinkBook. Root-caused cross-module display, graphics, power, and performance issues using system logs, traces, benchmarks, and low-level performance data, driving joint optimization across driver, firmware, and platform.
- **Trace-based performance & power analysis:** For stutter, power anomalies, and performance variance, built a system-level analysis flow on ETW/ETL Trace, aided by MSR/MMIO performance-counter collection to root-cause issues. Contributed to dynamic power-limit strategy design and tuning, continuously improving whole-machine performance and power via benchmark testing, competitive comparison, and system-level data analysis — repeatedly resolving severe performance issues blocking mass production.
- **Driver automated test & delivery infrastructure:** Designed and delivered a CI/CD automation pipeline spanning driver build, validation, certification, and release, abstracting a formerly manual delivery flow into parameterized, reusable, extensible automation stages. It compressed graphics-driver delivery from hours to minute-level automation — 90%+ efficiency gain — and remains the team's standard delivery path.
- **WHQL compliance & Windows Update release:** Fully responsible for WHQL certification and Windows Update release of 10+ drivers, building multi-architecture loop-testing and signing environments and managing validation, certification, signing, and release milestones for 100% compliant delivery.
- **Cross-vendor system-level collaboration:** Worked closely with Intel / Microsoft engineering teams across driver behavior, system compatibility, performance & power, and platform innovation — joint analysis and closed-loop resolution that landed system-level features and continuously improved the end-user experience.

- Owned test-infrastructure build-out and system-level debugging for EFI / UEFI firmware on the MacBook mass-production line, backing firmware quality validation and stability before new-model production.
- Designed and established cross-region, cross-site automated test flows, improving execution consistency across test environments and sites and safeguarding firmware quality during new-model production ramp.
- Led cross-team joint troubleshooting of complex firmware and hardware-adaptation issues, root-causing via logs, core dumps, test data, and on-site reproduction, delivering structured analysis and solutions and interfacing directly with Apple's engineering team.
- Reworked the existing test flow with a Python tool-chain, reducing manual execution and experience dependence and improving efficiency — shifting the team from human-driven to data- and automation-driven working.

Core Projects

BSOD Intelligent Diagnosis & Analysis Platform (core AI project)

SYSTEM ARCHITECT & FULL-STACK LEAD

- Designed and built an end-to-end automated BSOD analysis platform to break the efficiency bottleneck of diagnosing Windows driver issues at scale, covering dump collection, symbol resolution, issue classification, root-cause analysis, historical-case retrieval, and conclusion accumulation.
- Built a modular analysis architecture decoupling dump parsing, symbol engineering, the LLM-Agent reasoning engine, the knowledge-rule system, and the internal issue-management platform — delivering high-concurrency, extensible, continuously iterable system-diagnosis capability.
- Led R&D of a task-driven AI Agent fusing LLM with Skills so the system infers root cause and auto-classifies unknown crash scenarios — moving human involvement from complex “cause analysis” back to efficient “conclusion confirmation.”
- Built a knowledge-engineering system structuring historical cases, module traits, analysis strategies, and fix paths into reusable data assets that continuously improve diagnosis accuracy.
- The project cut average BSOD localization time by 80% and moved the team from traditional manual analysis toward an AI-assisted engineered-diagnosis model.

Driver Automation CI/CD Engineering System

ENGINEERING-EFFICIENCY LEAD & SYSTEM DRIVER OWNER

- Designed and shipped an end-to-end automated delivery pipeline for the Windows driver build, test, certification, and release flow, covering environment init, driver build, test execution, result collection, certification prep, signing, and release.
- Abstracted a formerly discrete, manual, environment-heavy flow into parameterized, reusable pipeline modules, solving core pain points — inconsistent environment config, hard-to-reproduce delivery steps, and time-consuming manual operations.
- Lifted per-delivery efficiency by over 90%, supporting fast integration and validation across models, platforms, and driver versions, and became the team's standardized driver-delivery infrastructure.
- Introduced result archiving, failure analysis, version tracking, and anomaly alerting into the pipeline, improving observability, traceability, and stability of driver delivery.

System Performance & Power Optimization

PERFORMANCE & POWER ENGINEER

- Contributed to dynamic power-limit strategy design and tuning for real-world multi-scenario usage, continuously improving whole-machine performance, power, and user experience via benchmarks, competitive comparison, and system-level metric analysis.
- Root-caused stutter, performance variance, and power anomalies via ETW/ETL Trace and MSR/MMIO-based performance counters, analyzing the interactions among driver, firmware, OS, and hardware platform.
- Drove upstream driver and firmware fixes from collected trace, counter, and benchmark data, repeatedly resolving system-level performance issues blocking mass production.
- Settled the performance-analysis flow and debugging methodology into reusable practice, improving the team’s efficiency on regressions, power anomalies, and cross-module issues.

Skills / Certificates / Other

Languages C++, C#, Python, Go

Systems & Debugging Windows Driver Stack, Display / Graphics / Power Driver, Dump Analysis, Symbol Debugging, ETW / ETL Trace Analysis, MSR/MMIO, Performance Counter, Hyper-V, System-level Debugging

Perf & Automation Benchmark, Perf / Power Tuning, Trace-based Analysis, CI/CD, Test Automation, WHQL, Windows Update Release, Driver Certification

Eng. Infrastructure Git, Linux, Docker, .NET, Test-automation platforms, Internal engineering tools, Data analysis & visualization

AI Engineering LLM Agent, Skills-based Agent, Knowledge Engineering, AI-assisted Debugging, Automated Root-Cause Analysis

Spoken Languages English (CET-6) — technical communication; experienced in cross-team collaboration and issue triage with Intel / Microsoft / Apple engineering teams.

Side work Test tools & docs: [gadgets.liutianyi.dev](#); portfolio: [liutianyi.dev](#)

Education

Fuzhou University Zhicheng College

Fuzhou, China

B.ENG. IN DIGITAL MEDIA TECHNOLOGY (FULL-TIME)

Aug. 2016 – May 2020