# Ric Li

Ric Li | **5+ years of exp.** | +86 17092619612 | ricmli@outlook.com | GitHub: ricmli

## Technical Profile

Performance-oriented Software Engineer with 5+ years of expertise in low-level Linux system and high-performance network development. Proven track record in designing and optimizing data plane solutions using DPDK and RDMA. Strong driver development and kernel integration skills. Active open-source contributor.

## Technical Skills

- **Languages:** C, C++, Rust, Zig, Python
- **Networking:** DPDK, RDMA (RoCEv2, Verbs API), eBPF/XDP/AF_XDP, TCP/IP, VLAN
- **Systems:** Linux Kernel/Userspace Development, NIC Drivers, Hardware Offload (TSO, VLAN), KVM, SR-IOV
- **Optimization:** Performance Tuning, SIMD (AVX512), Zero-Copy Architectures, PMD Tuning
- **Cloud/Virt:** Kubernetes, AWS ENA, IVSHMEM, Cloud-Native Networking

## Professional Experience

**BitIntelligence** |*Linux Driver Development Engineer* Dec 2024 – Jun 2025

Developed and optimized RDMA/Ethernet NIC drivers for high-performance computing and virtualization scenarios, implementing hardware offload features (TSO, VLAN) and creating char device-based management tools for real-time debugging and performance profiling.

**Intel** |*Systems Software Development Engineer* Jul 2020 – Nov 2024

Focused on high-performance user-space network transmission libraries using DPDK and RDMA, specializing in core data plane optimization, system integration, and low-latency transport protocol development.

## Project Experience

**RDMA/Ethernet NIC Driver Development** |*Core Developer* Dec 2024 – Jun 2025

- **TSO Offload:** Designed hardware descriptor format and implemented driver logic, offloading TCP segmentation to hardware. Increased large packet throughput from 16 Gb/s to **50 Gb/s** on a 400G NIC.
- **Debug Tools:** Developed debugfs and char device tools for **QPC dump** and **MPT/MTT table queries**, drastically speeding up hardware state diagnosis.
- **RDMA APIs:** Designed MQ commands and implemented **ibv_query_device/ibv_query_qp** Verbs APIs for kernel and user-space drivers.

**Media Transport Library** (DPDK Ecosystem) |*Core Developer & Maintainer* Jul 2021 – Jul 2024

- **100Gbps Data Plane:** Reconstructed video packet processing pipeline using **DPDK**, achieving line-rate processing of **ST2110-20** video streams on Intel Xeon with E810 NICs and **sub-millisecond** end-to-end latency.
- **RDMA Lossless Transport:** Independently designed and implemented a **RoCEv2**-based backend, scheduling QP and CQ to reduce **CPU utilization** from 100% to **below 10%** while maintaining **microsecond-level** latency.
- **Compute Optimization:** Rewrote YUV color space conversion using **AVX-512** intrinsics, achieving **8x** throughput improvement; utilized **DMA engine** to reduce memory copies, saving **50%** CPU resources.
- **Multi-Cloud Support:** Led addition of **AWS EC2 ENA** virtualization NIC support; introduced **AF_XDP** as a high-performance kernel bypass alternative, achieving **60%** of DPDK performance in pure kernel environments.
- **Open Source Development:** Developed type-safe and memory-safe **Rust bindings**; fully implemented control plane protocols (**ARP, DHCP, IGMP, PTP**); submitted **200+ PRs** as an official DPDK ecosystem project.

## Education

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| Huazhong Univ. of Sci. & Tech. | Control Eng. | Master's Degree | 2018-2020 |
| Huazhong Univ. of Sci. & Tech. | Automation | Bachelor's Degree | 2014-2018 |

## Additional Information

- **English:** Fluent (CET-6: 604). Proficient in technical documentation and international collaboration.
- **Publication:** RMTS: A Real-time Media Transport Stack Based on Commercial Off-the-shelf Hardware (MHV '23)
- **Open Source:** Contributor to DPDK, libxdp, Wireshark