

Chun-Min Chang

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Summary

Highly self-driven software engineer with more than **10** years of expertise in browser engine development, specializing in **multimedia** technologies for Firefox using **C/C++, Rust, and JavaScript**. Led major implementations in media processing systems, including key contributions to WebCodecs, web conferencing audio, and **cross-platform** audio libraries. Proficient in **multi-threaded** programming, with a proven track record of delivering solutions that enhance performance, stability, and user experience.

Work Experience

Staff Software Engineer, Mozilla , Portland, U.S. (Vancouver, CA)	Mar, 2024 - Present
• Optimized VideoEncoder on Windows to run 7x faster • Achieved a 9x performance boost for VideoEncoder on macOS	(Link) (Link)
Senior Software Engineer, Mozilla , Portland, U.S. (Vancouver, CA)	Mar, 2021 - Feb, 2024
• Engineered W3C WebCodecs API, revolutionizing web-based media processing capabilities • Architected a unified model for Audio and Video Decoder/Encoder, improving system coherence and maintainability • Developed a video encoder utilizing FFmpeg for various formats (H.264, VP8, VP9, AV1) • Overhauled audio infrastructure, optimizing multi-microphone capabilities for web conferencing	(Link) (Link) (Link)
Software Engineer, Mozilla , Portland, U.S.	July, 2018 - Feb, 2021
• Spearheaded the migration of audio library from C/C++ to Rust, significantly enhance stability • Resolved 10+ critical data racing issues and memory leaks, bolstering system reliability • Achieved a 35x performance improvement for simultaneous multi-stream initiation • Expanded test coverage to nearly 100% for critical code paths • Implemented W3C Media Session API, enabling media playback control via system UI • Introduced AVIF image transparency support, improving compatibility with modern standards • Served as a core reviewer, ensuring code quality across a multinational team	(Link) (Link) (Link) (Link)
Software Engineer, Mozilla , Taipei, Taiwan	Oct, 2014 - Jan, 2018
• Reduced audio looping delays by 90%, enhancing the audio experience • Implemented cross-platform (Windows, macOS, and Linux) surround sound (5.1/7.1) support • Crafted a versatile audio mixer for seamless conversion between various channel layouts • Created a diagnostic tool streamlining bug triage, used daily to gather audio device data • Established secure J-PAKE over TLS transmission between Firefox OS TV and Android • Integrated W3C Presentation API for webpage casting from Firefox desktop to Firefox OS TV • Orchestrated input method connectivity for physical keyboards on Firefox OS phones	(Link) (Link) (Link) (Link) (Link) (Link)

Education

National Tsing Hua University	Hsinchu, Taiwan
• M.S. in Computer Science	Sep, 2012 - Aug, 2014
• Advisor: <i>Prof. Pai H. Chou</i> (Embedded Platform Lab) • Thesis: Cooperative Tracking using Encounter Information by Particle Filtering	(Link)
• B.S. in Computer Science	Sep, 2008 - June, 2012
• Third Prize in the senior CS project contest: Remote Controllable Wifi Webcam Car • Headed the Guitar Club and directed activity planning for 10+ school camps	(Link)

Skills

- Programming: C/C++, Rust, Javascript, HTML, CSS, Python, Shell
- Tools: VCS - Git, Mercurial, Debugging - GDB, LLDB, RR
- Language: Taiwanese (Native), Mandarin (Native), English (TOIEC 905/990)