

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 ([Link](#))
- Achieved a 9x performance boost for VideoEncoder on macOS ([Link](#))

Senior Software Engineer, Mozilla, Portland, U.S. (Vancouver, CA) Mar, 2021 - Feb, 2024

- Engineered W3C WebCodecs API, revolutionizing web-based media processing capabilities ([Link](#))
 - 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](#))

Software Engineer, Mozilla, Portland, U.S. July, 2018 - Feb, 2021

- Spearheaded the migration of audio library from C/C++ to Rust, significantly enhance stability ([Link](#))
 - 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 ([Link](#))
- Introduced AVIF image transparency support, improving compatibility with modern standards ([Link](#))
- Served as a core reviewer, ensuring code quality across a multinational team ([Link](#))

Software Engineer, Mozilla, Taipei, Taiwan Oct, 2014 - Jan, 2018

- Reduced audio looping delays by 90%, enhancing the audio experience ([Link](#))
- Implemented cross-platform (Windows, macOS, and Linux) surround sound (5.1/7.1) support ([Link](#))
 - Crafted a versatile audio mixer for seamless conversion between various channel layouts ([Link](#))
- Created a diagnostic tool streamlining bug triage, used daily to gather audio device data ([Link](#))
- Established secure J-PAKE over TLS transmission between Firefox OS TV and Android ([Link](#))
- Integrated W3C Presentation API for webpage casting from Firefox desktop to Firefox OS TV ([Link](#))
- Orchestrated input method connectivity for physical keyboards on Firefox OS phones ([Link](#))

Education

National Tsing Hua University Hsinchu, Taiwan
• M.S. in **Computer Science** Sep, 2012 - Aug, 2014

- Advisor: Prof. Pai H. Chou (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 ([Link](#))
- Headed the Guitar Club and directed activity planning for 10+ school camps

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)