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Experiments in Using AI to Enhance the Linux Spanning Tree Protocol (STP)

The Linux kernel implementation of the Spanning Tree Protocol (STP) has been around since early 2.4 (2000). The IEEE Bridge has evolved and the in kernel version is eleven years behind the current 802.1Q-2014. There are more complete user space implementations but they are not widely used. With the rapid emergence of large language models (LLMs) and AI-assisted development tools, a natural question arises: can AI meaningfully help with kernel networking code?

This talk shares real-world experiments applying AI to the Linux STP subsystem. The experiments included generating kernel patches, drafting documentation, proposing test cases, and even assisting with this very conference proposal. The results were decidedly mixed: sometimes AI provided useful starting points or helped with tedious boilerplate, while other times it produced misleading, subtly incorrect, or outright unusable code. In some cases, the time spent validating and correcting AI output outweighed the benefits.

The session will present concrete examples of what worked well (documentation drafting, simple test generation) and what caused problems (complex patch proposals, concurrency correctness, kernel coding style). It will also reflect on lessons learned about integrating AI into kernel development workflows without compromising review quality or maintainability.

Goals for the Session:

Share practical experiences of using AI for Linux networking development.

Identify areas where AI can accelerate or simplify work.

Expose the limitations and pitfalls encountered in kernel contexts.

Foster a discussion with other kernel and networking developers on best practices for responsibly leveraging AI in open source development.

Audience:

Kernel networking developers, maintainers, and contributors interested in the role of AI in open-source workflows, as well as those curious about the challenges of applying new tools to mature, critical subsystems.

Format:

30–40 minutes presentation plus discussion.

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Session Classification: Networking Track

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