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AI flame graphs with eBPF

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The world urgently needs better AI analysis tools to find AI datacenter cost reductions. eBPF has been used for a decade to help find compute performance wins and various companies have now been building eBPF tools for AI analysis. This session discusses one such tool: the open source AI flame graphs built by Intel (by us: the talk presenters) which uses eBPF for kernel driver instrumentation and the Intel eustall hardware profiler for GPU instruction pointer sampling. The resulting flame graph spans all CPU code (including the OS kernel) and code running on the GPU or AI accelerator. (Prior AI flame graphs have focused on the CPU code paths only.) We will explain how it works, challenges involved, solicit feedback, and discuss possible future kernel work to support this kind of observability. CPU flame graphs are widely adopted and have over 100 implementations, so an AI version was the first tool Brendan wanted to get working fully on AI, but it's just the start.

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