

Logging What Matters: Presenting Pythia and Just-in-Time Instrumentation

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Abstract

Distributed systems are immensely complex because they are comprised of many nodes and encompass many data center stack layers (e.g., virtualization, OSes, networks). Diagnosing problems in these complex systems is heavily reliant on developer guesswork to determine the “where and what” of instrumentation: where to enable instrumentation, and what data to gather. Additionally, it is difficult for developers to accurately predict this “where and what” a priori to provide insight into future problems. In our ongoing research, we are creating and evaluating an always-on, just-in-time instrumentation framework called Pythia that makes these “where and what” determinations automatically in a running system. In response to newly-observed problems, Pythia searches through the set of possible instrumentation choices to enable sufficient instrumentation needed to provide visibility into the problem. In this talk, we will present Pythia’s architecture and our current progress.

Speaker Bios



Emre Ates is a Ph.D. candidate in the Department of Electrical and Computer Engineering of Boston University. His current research interests include automated analytics on large-scale computing systems and distributed systems.



Lily Sturmman is a Master’s student in Software Engineering at the Harvard Extension School. She is currently doing research with the Massachusetts Open Cloud on dynamic instrumentation of distributed systems, and is a big fan of open source software.