The Long Road towards Testing Multi-Threaded Programs with KLEE

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- **Where is the catch?**

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- **A posteriori approaches (searchers, state pruning) alone are insufficient!**

Coarse Thread-Scheduling

Thread 1

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; a += 1
%1 = load i32, i32* @a, align 4
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store i32 %2, i32* @a, align 4
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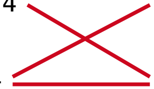

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Data races are undefined behavior!
[C11 §5.1.2.4/25] [C18 §5.1.2.4/35]

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  - Symbolic accesses to shared memory objects may require SMT solving

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A deterministic engine is key for our approach!

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data non-determinism

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Read the extended version of our CAV'20 paper [1]: **https://arxiv.org/abs/2005.06688**

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