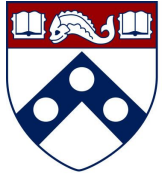


Brief Introduction

for Systems Seminar 2024-10-10

Caleb Stanford

About me



Penn
UNIVERSITY of PENNSYLVANIA



UC San Diego

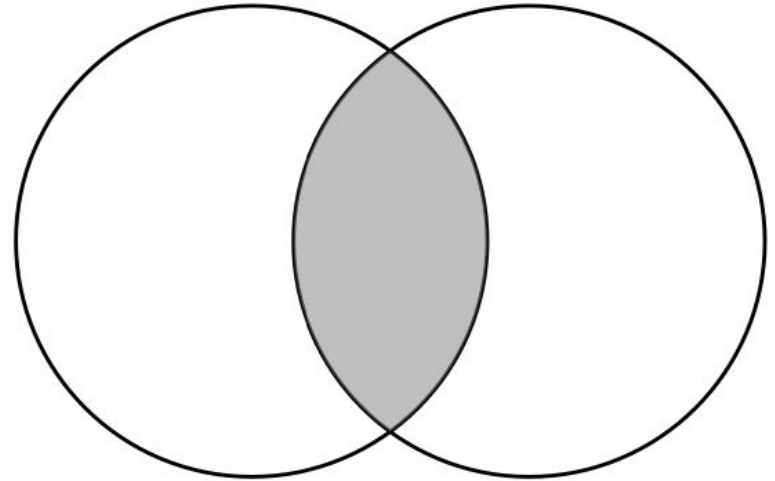


UC DAVIS
UNIVERSITY OF CALIFORNIA

(July 2023)

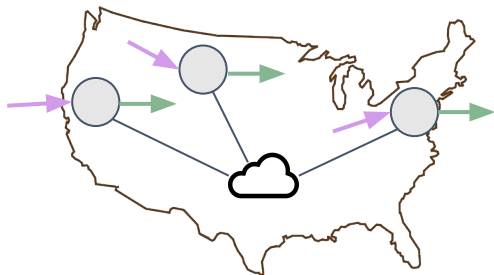
Programming Languages

Formal Methods



Real Systems

Primary research projects



PL for data stream processing

[POPL'19, PLDI'19, OOPSLA'20, CIDR'22,
PPoPP'23, POPL'23, PLDI'24]



Z3 $\partial_x(L)$

Regex SMT solvers

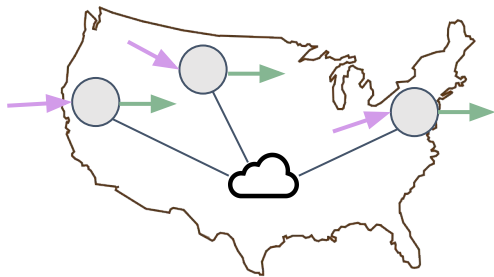
[PLDI'21, CAV'23]



Securing the Rust supply chain ecosystem

[Ongoing]

Primary research projects



PL for data stream processing

[POPL'19, PLDI'19, OOPSLA'20, CIDR'22, PPoPP'23, POPL'23, PLDI'24]



Z3 $\partial_x(L)$

Regex SMT solvers

[PLDI'21, CAV'23]

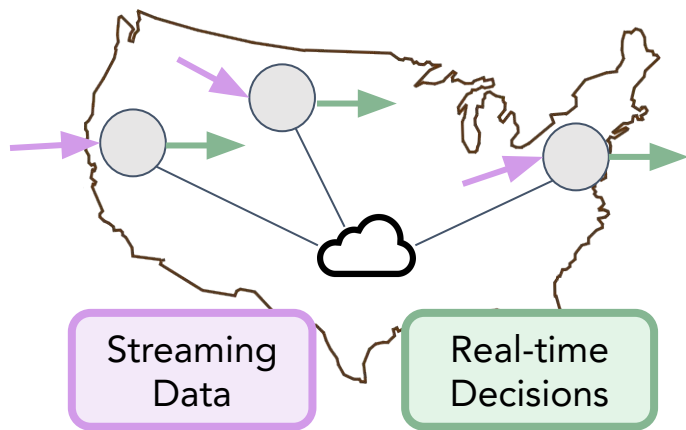


Securing the Rust supply chain ecosystem

[Ongoing]

PL for data stream processing

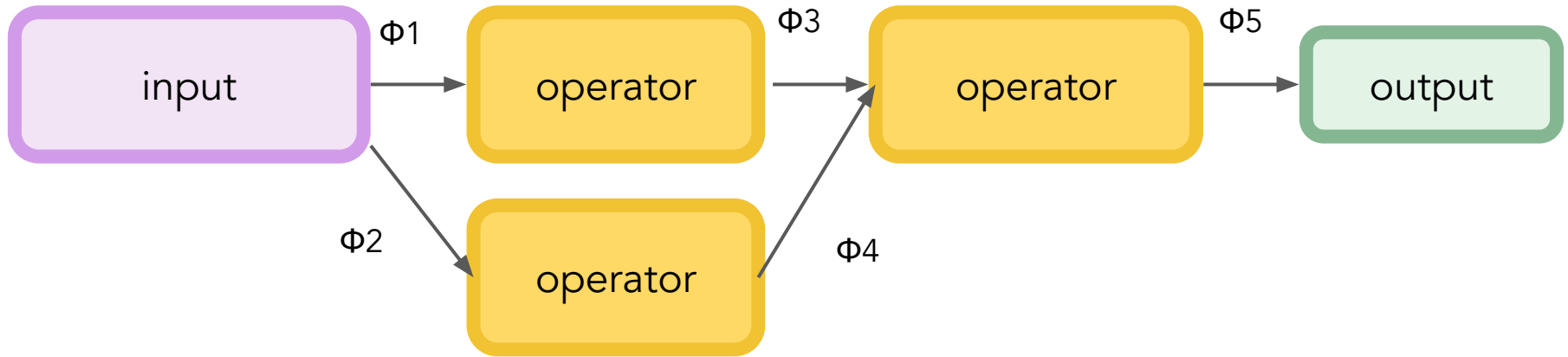
How can we develop trustworthy data stream processing systems?



Dimensions of formal correctness:

- Type safe, deterministic parallelism
- Performance
- Offline verification
- Online verification
- Security and privacy
- ...

Vision: verified dataflow programming



Φ_i – verified safety and correctness properties

Z3

Interested?

For students: start by taking (or auditing) my class!

- Spring 2024: [189C: Software Correctness](#)
- Fall 2024: [119: Data Processing Pipelines](#)
- Spring 2025: [261: Program Verification](#)

Talk to students in my [research group](#)

Try out some of our [existing software](#):

- ✨ **New arrivals** ✨ [LHS](#), [Cargo Sherlock](#), [PCCC](#), [Rust Counterexamples](#)