One representation to rule them all

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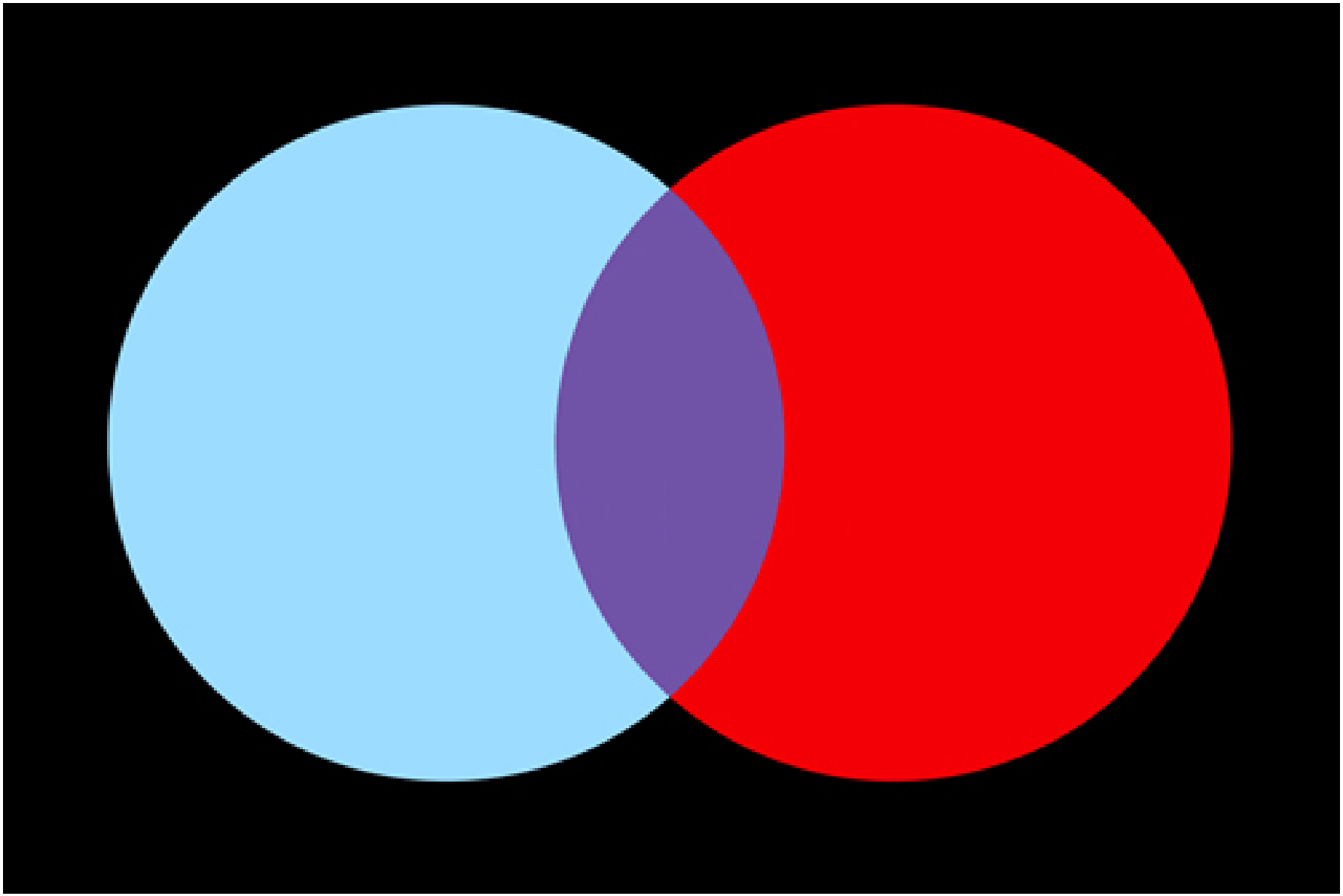
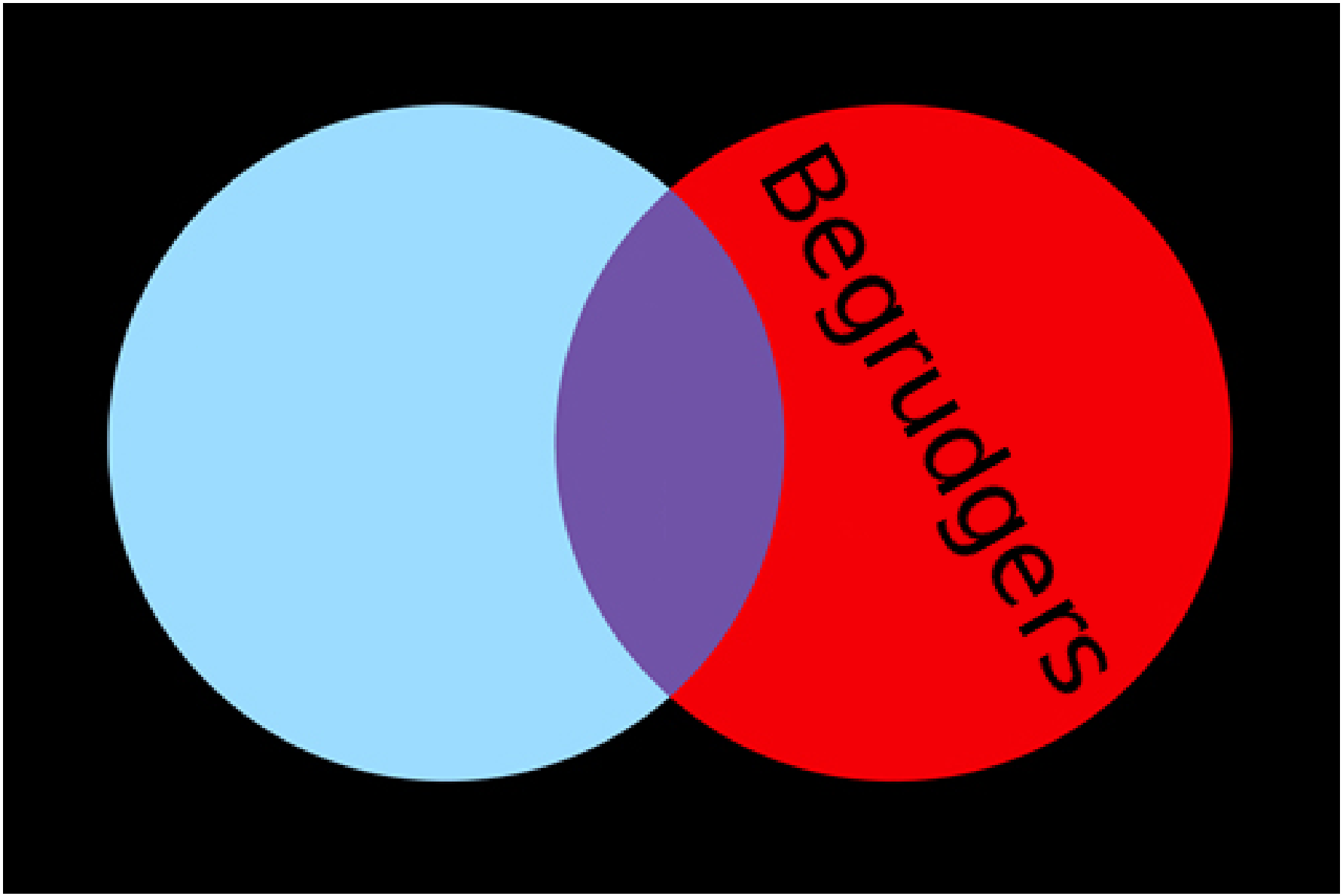
One representation to rule them all

SSA

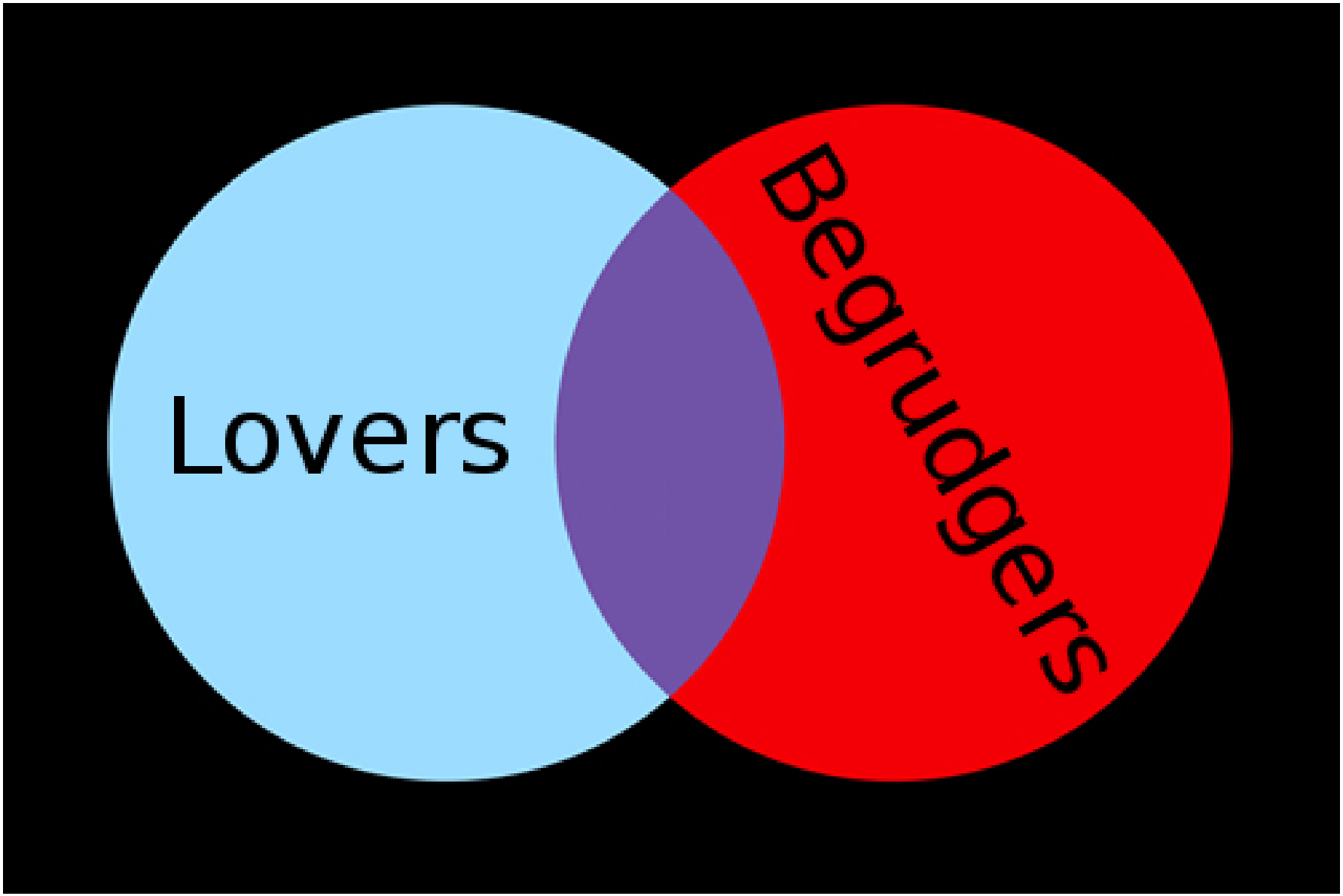
One representation to rule them all



One representation to rule them all



One representation to rule them all



One representation to rule them all

- Fast
- Efficient

(pick two)

One representation to rule them all

Conditional Pointer Aliasing and Constant Propagation

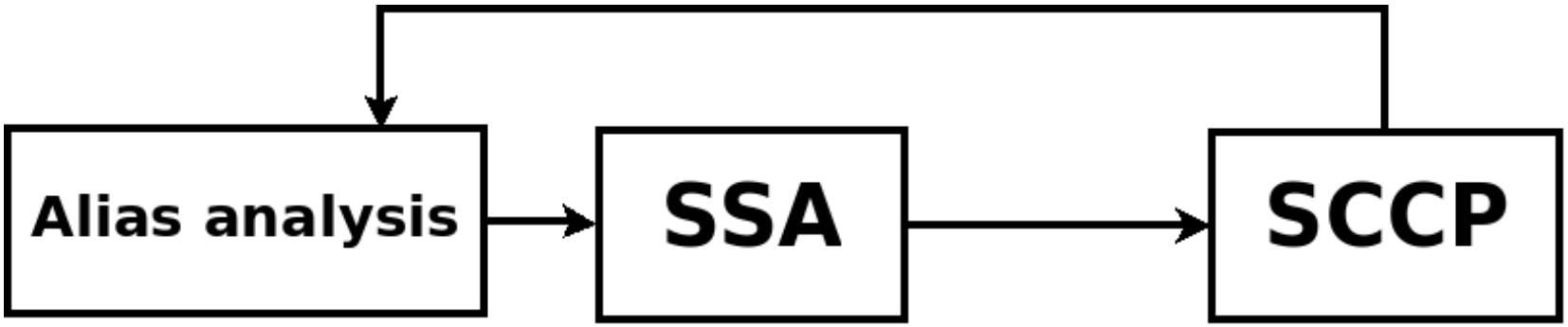
Anthony Pioli.
MS Thesis, SUNY at New Paltz Technical Report #99-102, January 1999.

One representation to rule them all

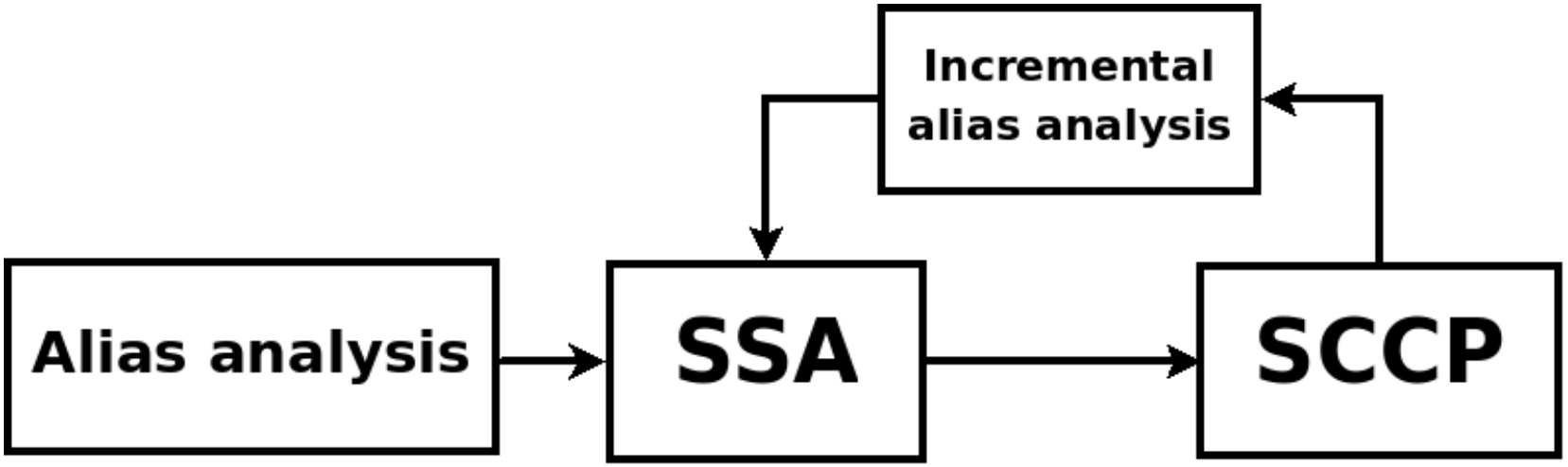
Constant Propagation with Conditional Branches

Mark N. Wegman, F. Kenneth Zadeck
ACM Trans. Program. Lang. Syst. 13(2): 181-210 (1991)

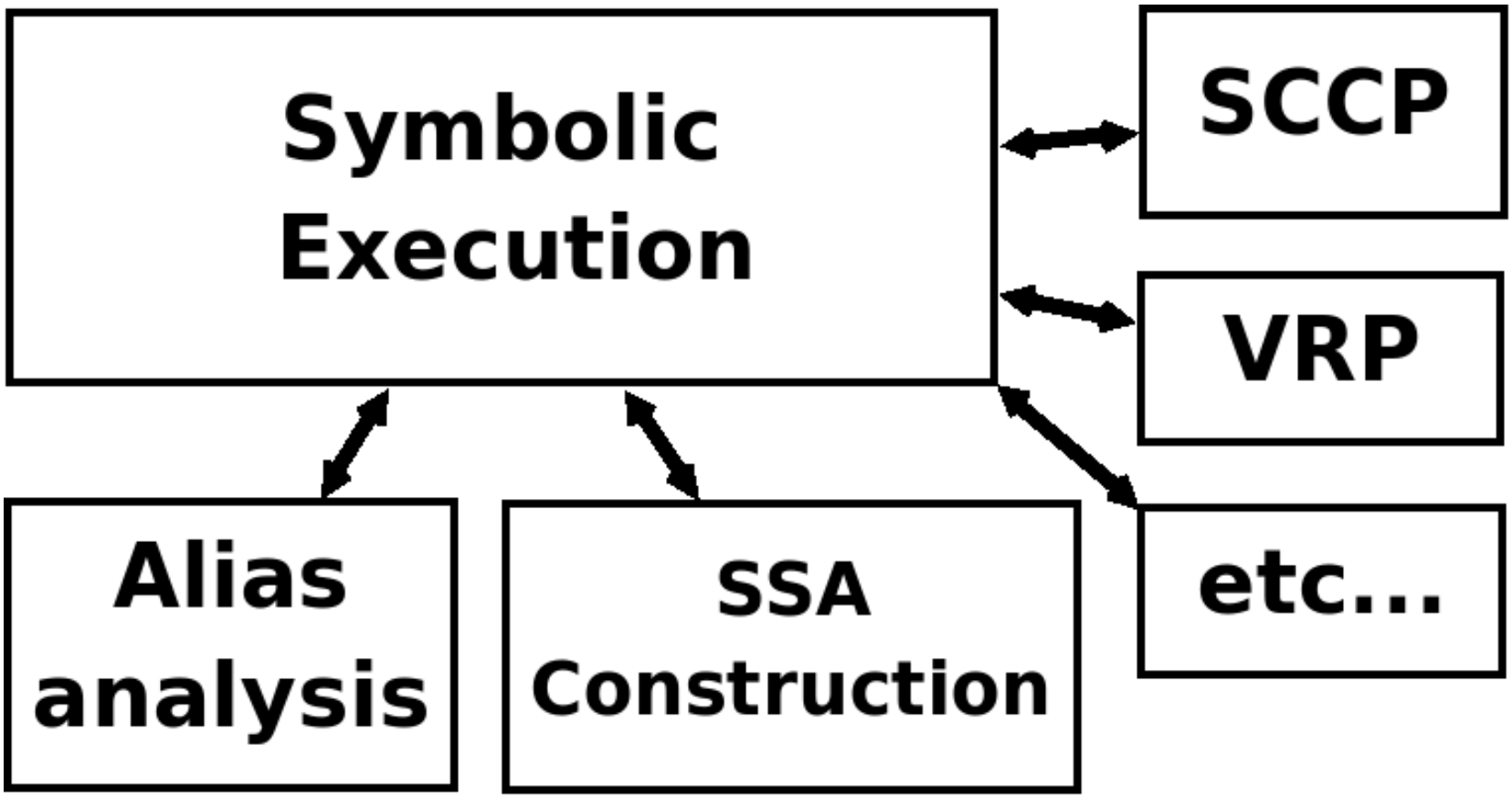
Current


Alias analysis
SSA
SCCP

or


Incremental
alias analysis
Alias analysis
SSA
SCCP

Ideal


Symbolic Execution
SCCP
VRP
etc...
Alias analysis
SSA Construction

One representation to rule them all

- Step 1: SSA construction via Symbolic Execution
  - (See paper)
  - Tested on one 25-line program
  - Might actually work in general

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- Step 1: SSA construction via Symbolic Execution
- Step 2: ...

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- Step 1: SSA construction via Symbolic Execution
- Step 2: ...
- Step 3: Profit

Thanks

- SSA 2009 participants
- FIT reviewers