Dependence-Aware, Unbounded Sound Predictive Race Detection

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Strong Dependently Precedes

- No false races
- More races than WCP (Kini et al, 2017)

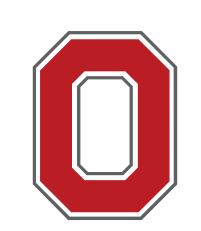
Weak Dependently Precedes

 Finds all races knowable from a single execution unlike WCP and DC (Roemer et al, 2018)

	Prior Work			Our Work	
	≺ _{HB}	\prec_{WCP}	\prec_{DC}	≺ _{SDP}	< _{WDP}
Critical section ordering	All	Confli	cting	wr-rd and rd-wr	Last wr-rd
Orders rel to	acq	Wr/	rd	wr/rd or next rd	Next br
Includes ≺ _{PO} ?	Yes	No	Yes	No	Yes
Composes with \leq_{HB} ?	Yes	Yes	No	Yes	No
acq(m) < rel(m)	Voc	Voc	Voc	Vac	Voc
⇒ rel(m) <rel(m)< td=""><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td></rel(m)<>	Yes	Yes	Yes	Yes	Yes
Transitive?	Yes	Yes	Yes	Yes	Yes

Thread 1 wr(x) acq(m) wr(y) rel(m)	Thread 2 acq(m) wr(y) rel(m) rd(x)	Prior Ours WCP-race? SDP-race? No Yes DC-race? WDP-race? No Yes Predictable race? Yes	Prior Ours WCP-race? SDP-race? No No DC-race? WDP-race? Yes Predictable race? Yes	Thread 1 wr(y) acq(m) wr(x) rel(m)	<pre>Thread 2 acq(m) rd(x) rd(y) br rel(m)</pre>
Thread 1 acq(m) wr(y) rd(x) br rel(m)	acq(m) wr(x) rel(m) rd(y)	PriorOursWCP-race?SDP-race?NoNoDC-race?WDP-race?NoYesPredictable race?Yes	Prior Ours WCP-race? SDP-race? No No DC-race? WDP-race? No Yes Predictable race? No	acq(m) rd(x) br wr(y) rel(m)	<pre>Thread 2 acq(m) wr(x) rel(m) rd(y)</pre>

	Dainannala	O		Prior work	Our work	
	Prior work WCP-races	Our work SDP-races		DC-races	WDP-races	Verified WDP-races
аvгога	5	5	аvгога	5	5	5
batik	0	0	batik	0	0	0
h2	9	9	h2	11	12	11
luindex	1	1	luindex	1	1	1
lusearch	0	0	lusearch	0	1	0
pmd	6	8	pmd	9	10	9
sunflow	2	2	sunflow	2	2	2
tomcat	86	91	tomcat	94	284	158
xalan	21	52	xalan	17	170	168



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Talk on Friday 12:07 - 12:30 in Olympia

