

PeSCo

Predicting **S**equential **C**ombinations of Verifiers

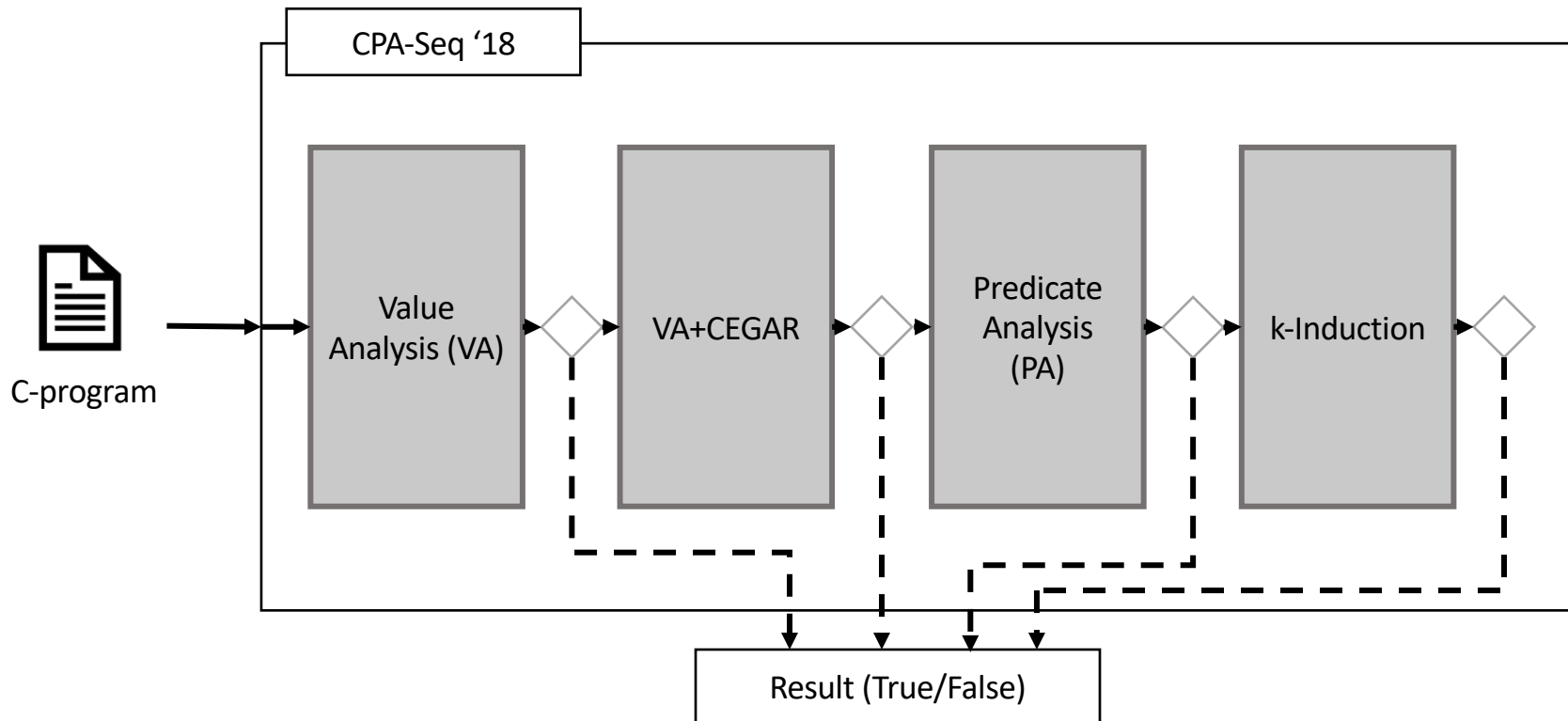
Cedric Richter and Heike Wehrheim



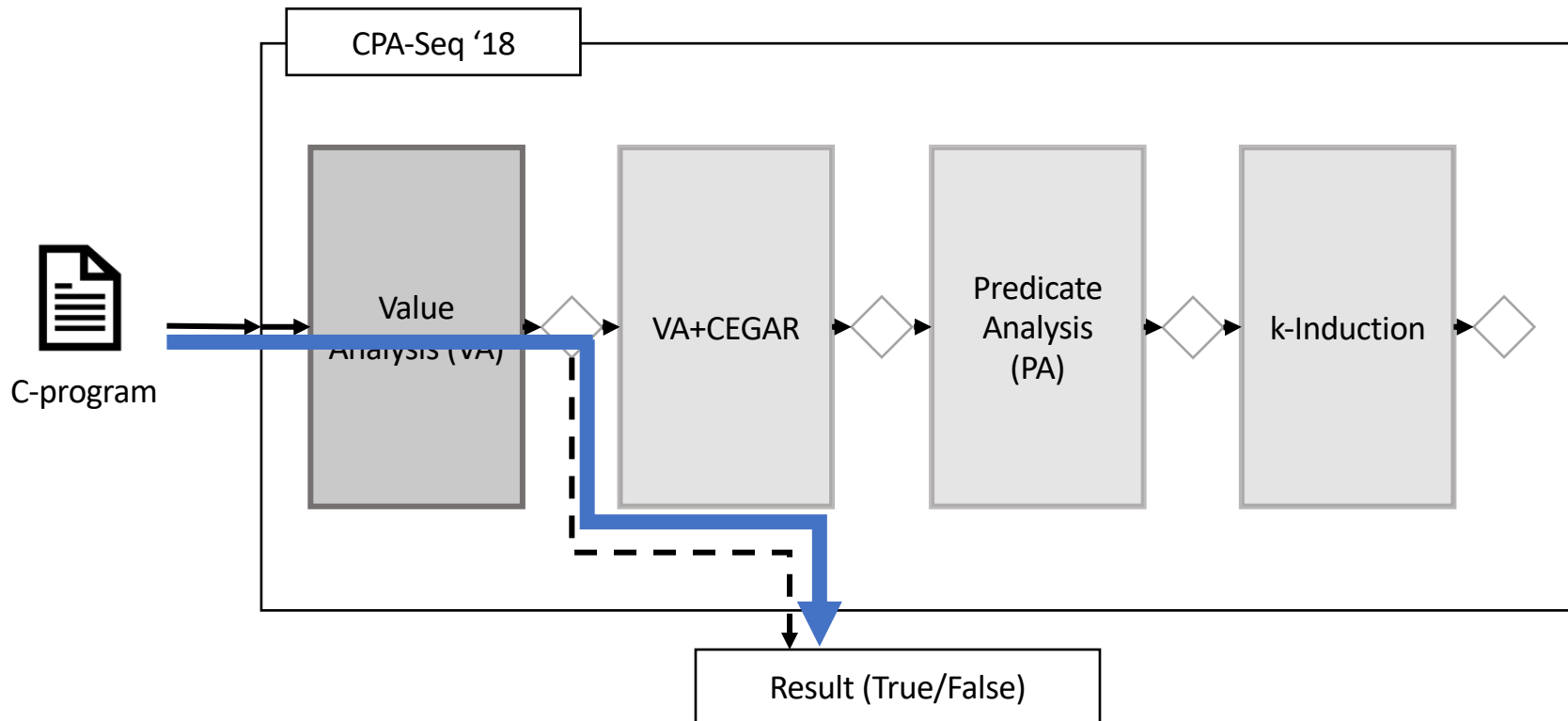
SV-COMP

2019

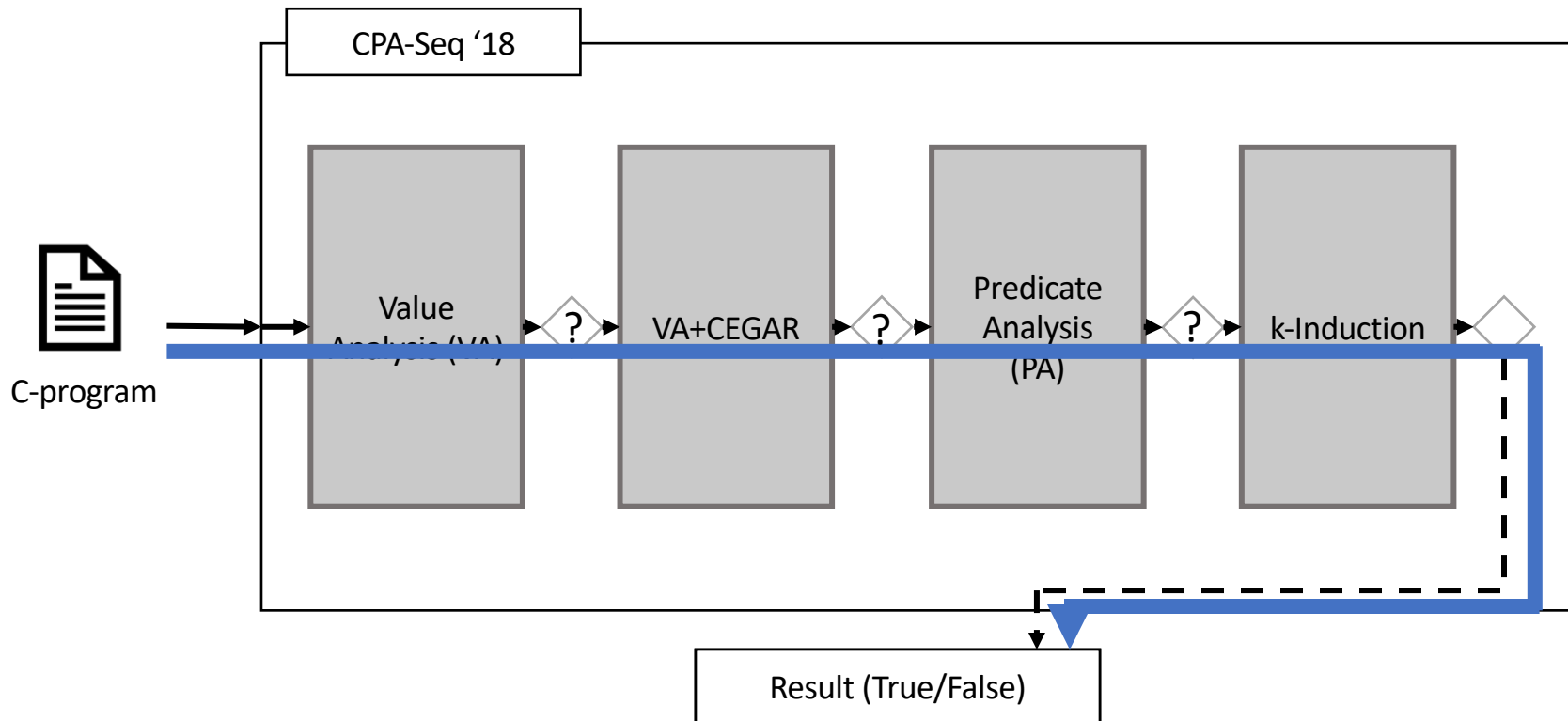
Sequential Compositions



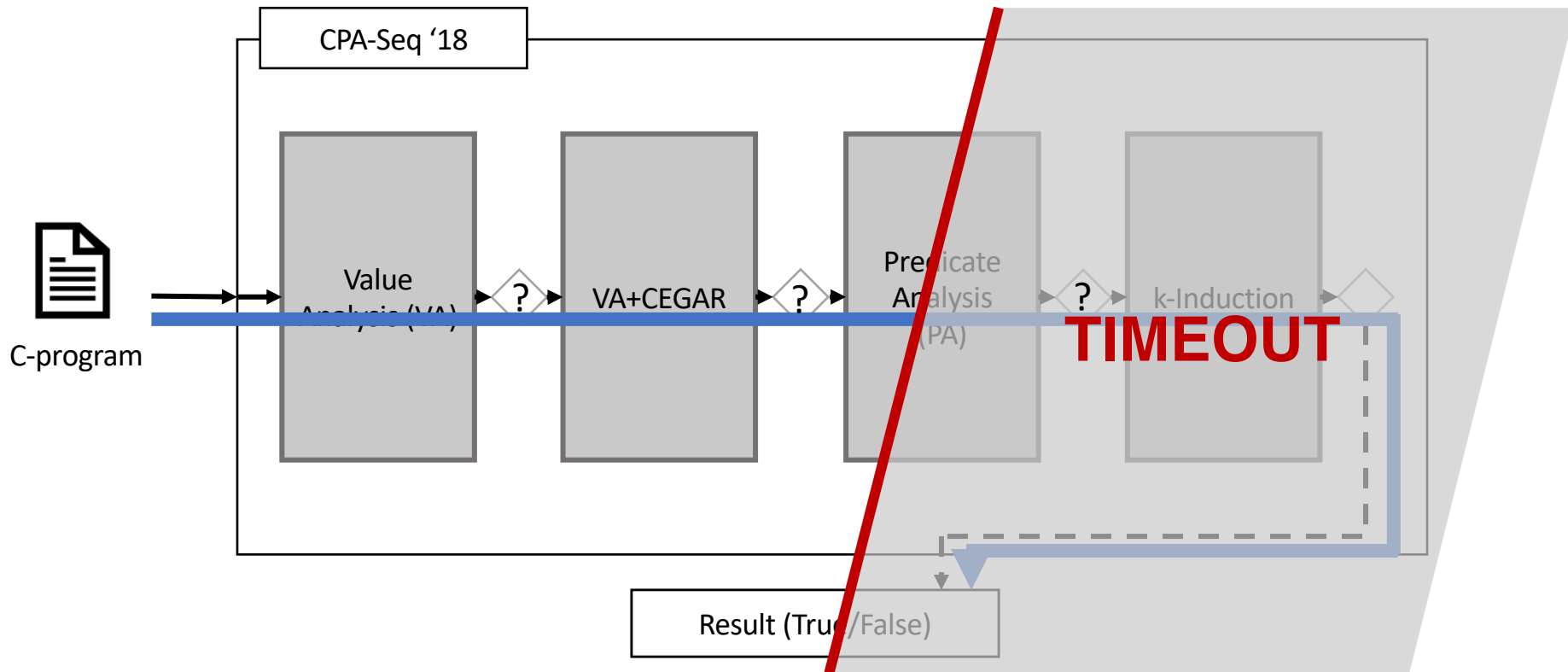
Sequential Compositions



Sequential Compositions

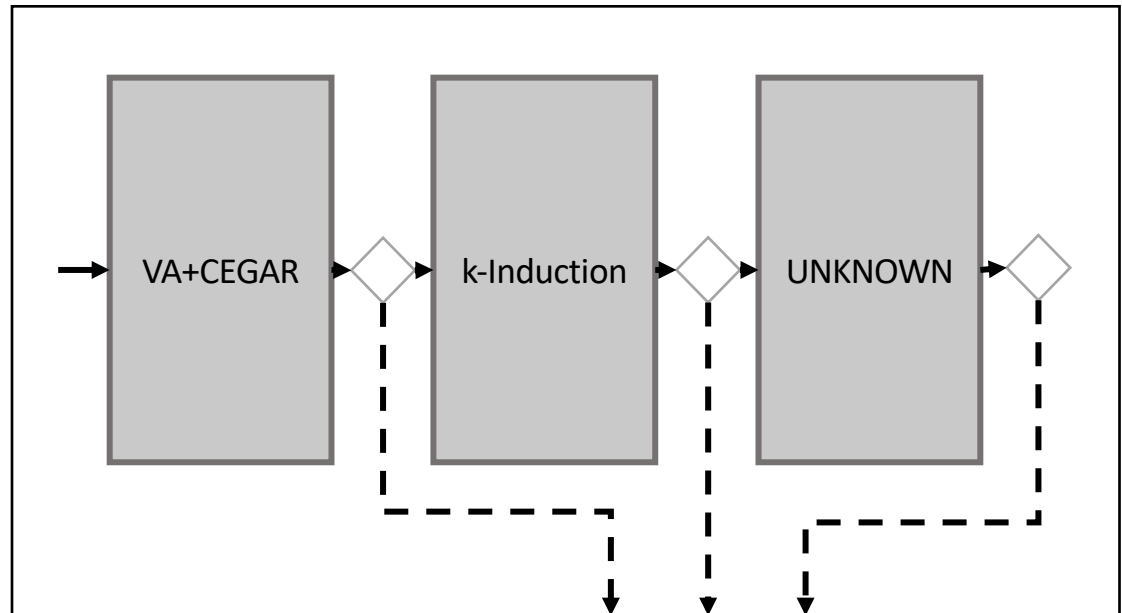


Sequential Compositions

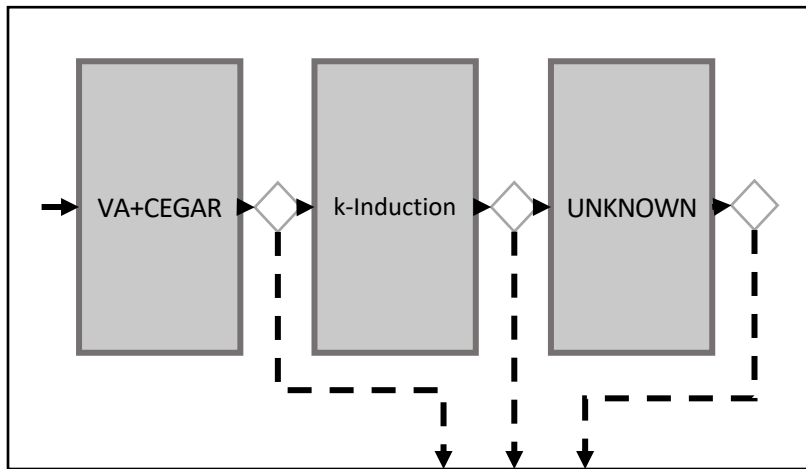


Learning from competitions

Analysis	result	cpu (s)
Value Analysis (VA)	unknown	902
VA + CEGAR	true	63
Predicate Analysis	unknown	900
k-Induction	true	304
BMC	unknown	905
UNKNOWN	unknown	0



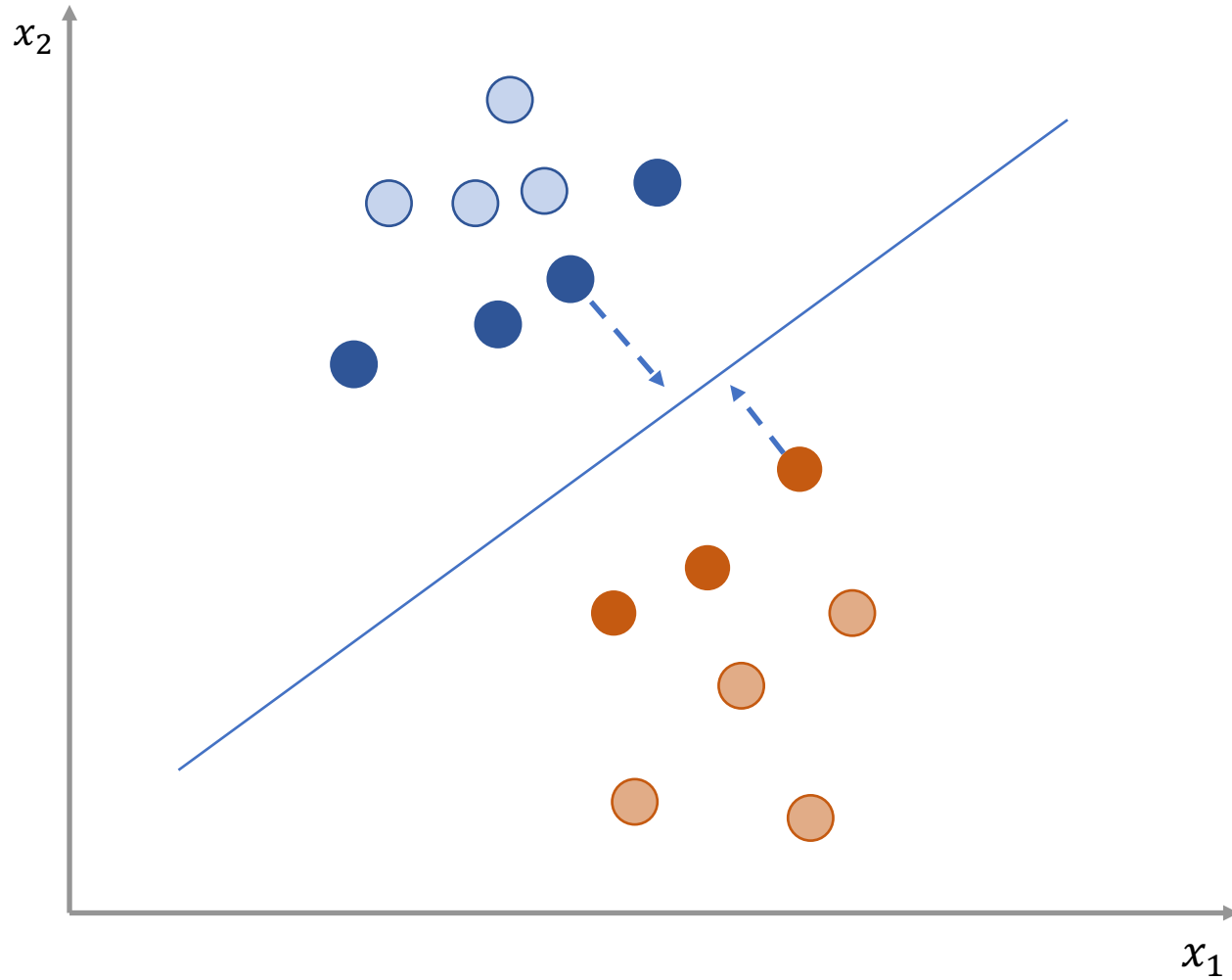
Binary decomposition



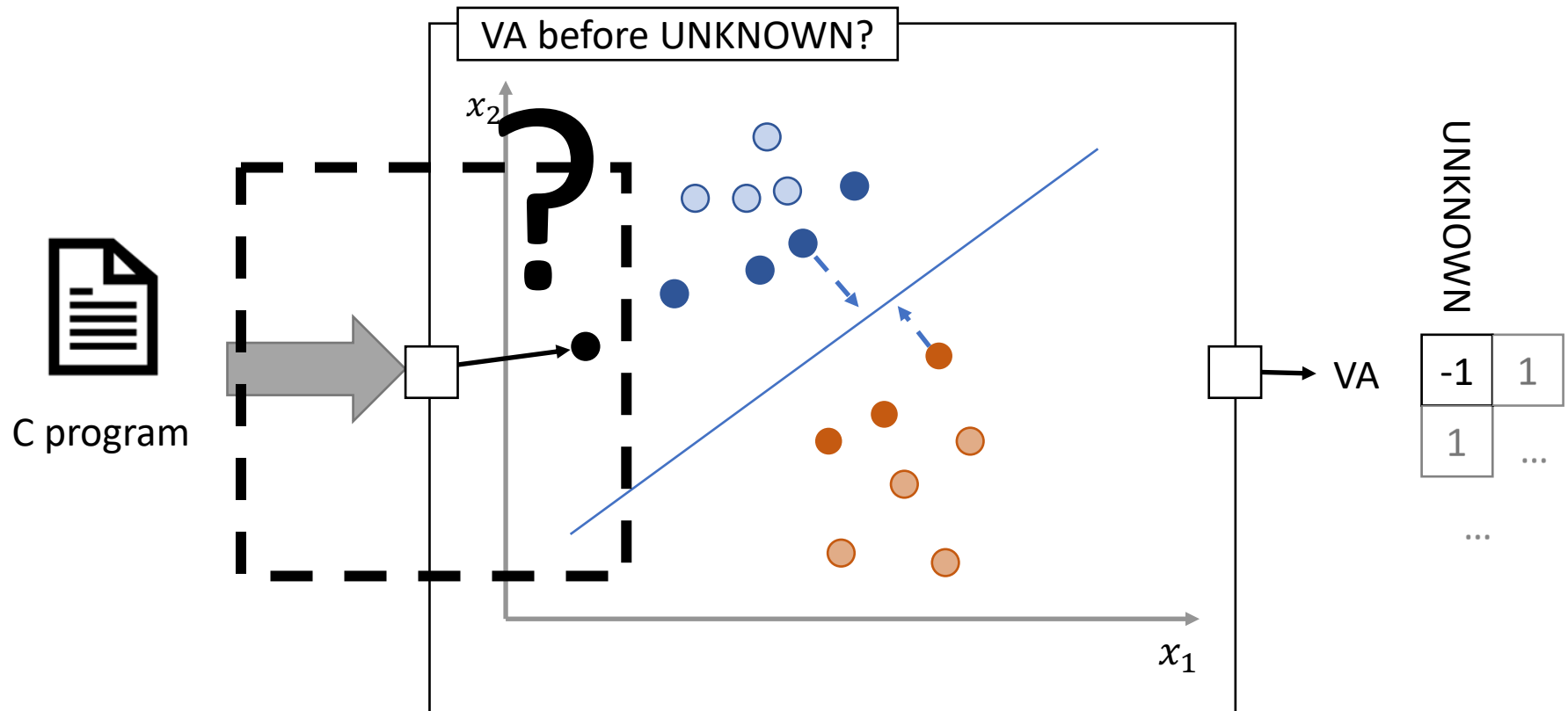
		After					
		UNKNOWN	BMC	k-Induction	Predicate	VA+CEGAR	VA
Before	VA	-1	1	-1	-1	-1	0
	VA+CEGAR	1	1	1	1	0	
	Predicate	-1	1	-1	0		
	k-Induction	1	1	0			
	BMC	-1	0				
	UNKNOWN	0					

Legend	
1	True
-1	False
0	Ignore

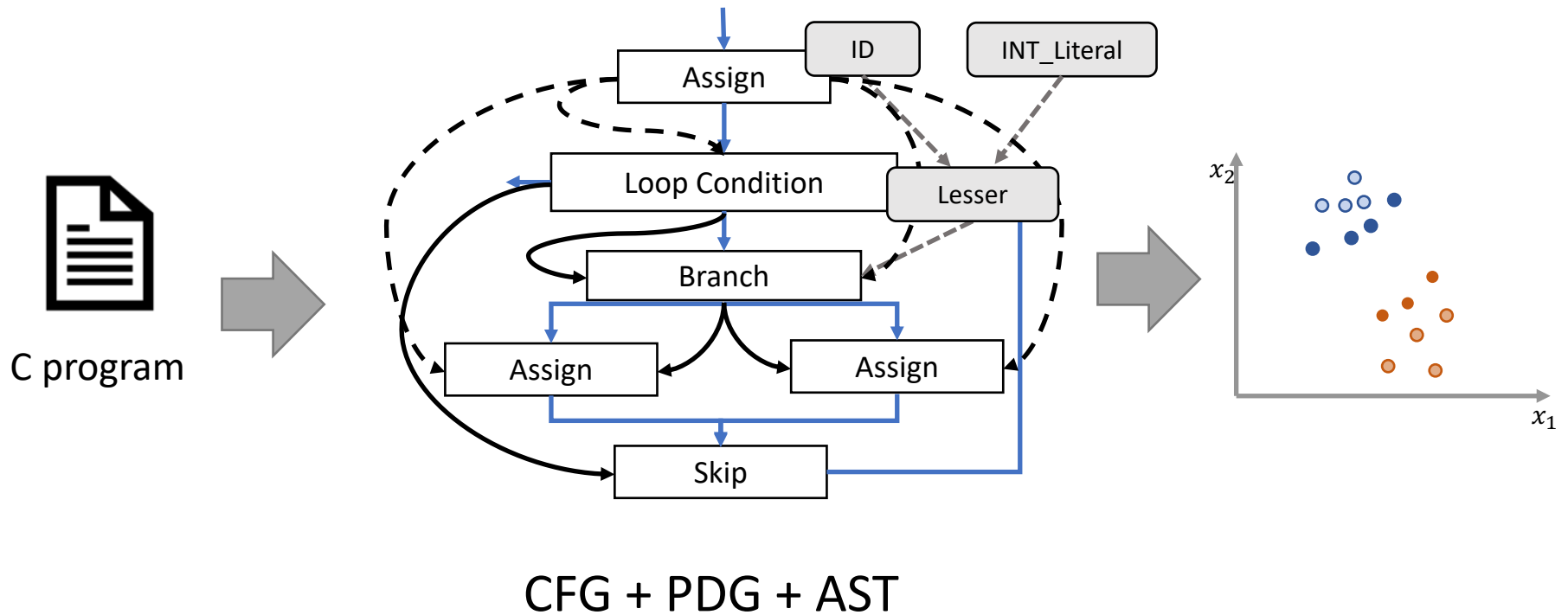
Support Vector Machine



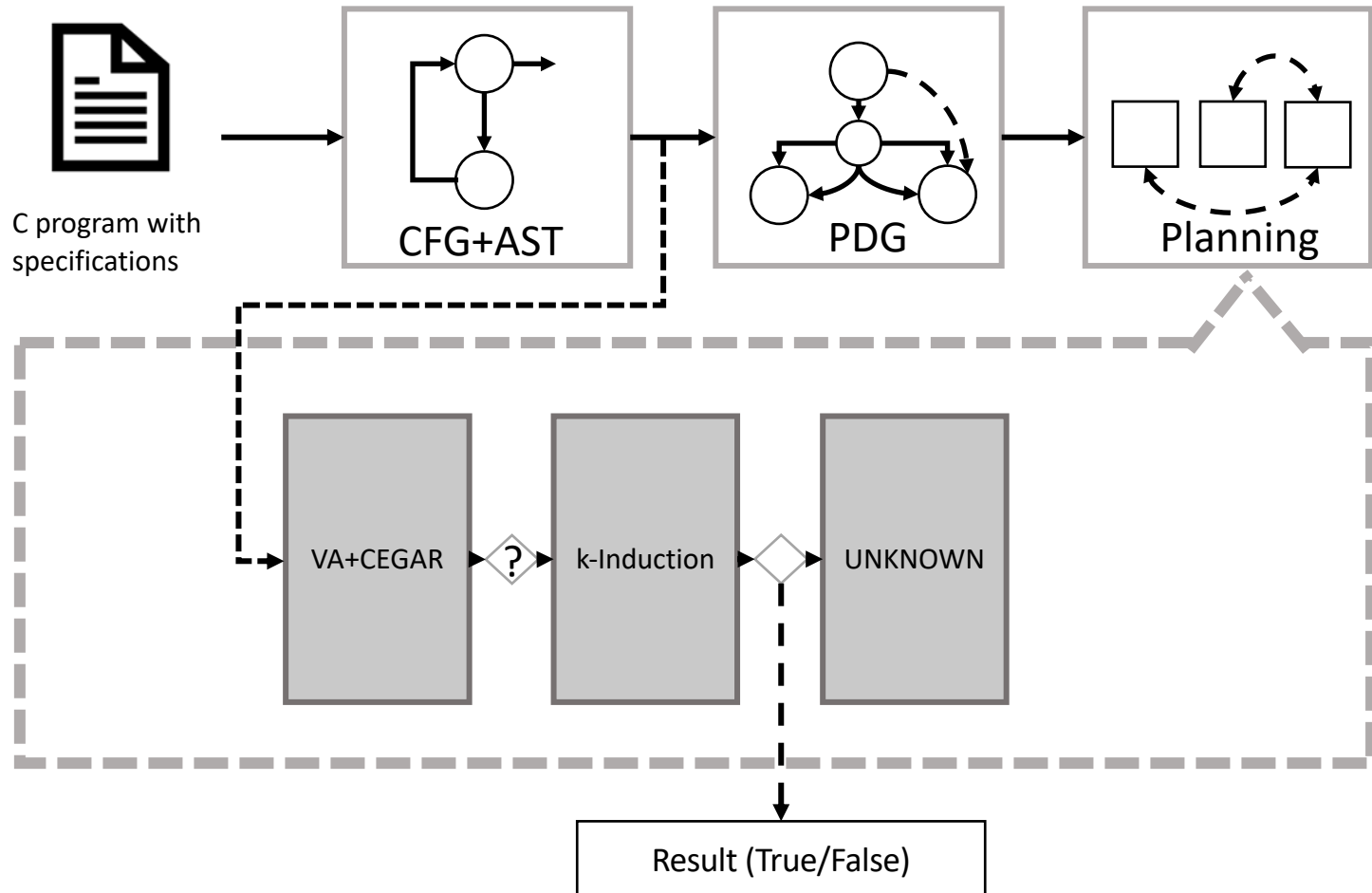
SVM - Inference



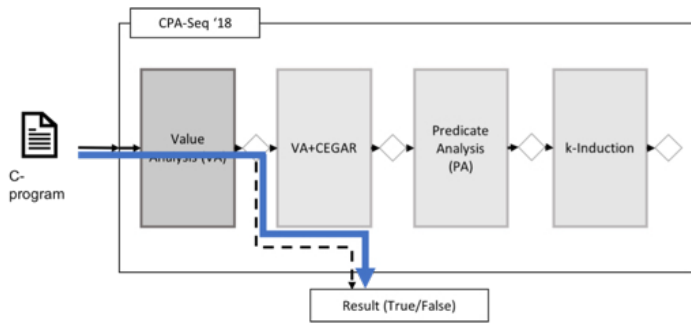
Program representation



PeSCo - Workflow



Conclusion



After \ Before	UNKNOWN	BMC	k-Induction	Predicate	VA+CEGAR	VA
VA	-1	1	-1	-1	-1	0
VA+CEGAR	1	1	1	1	0	
Predicate	-1	1	-1	0		
k-Induction	1	1	0			
BMC	-1	0				
UNKNOWN	0					

