

Creating a Weighted CNF benchmark set

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Weighted Model Counting on CNF

$$\phi = (x_1 \vee \neg x_3) \wedge (\neg x_1 \vee x_2 \vee x_3)$$

x_1	x_2	x_3	ϕ	w
T	T	T	T	$0.2 \cdot 0.6 \cdot 0.5 = 0.06$
T	T	F	T	$0.2 \cdot 0.6 \cdot 0.5 = 0.06$
T	F	T	T	$0.2 \cdot 0.4 \cdot 0.5 = 0.04$
T	F	F	F	0
F	T	T	F	0
F	T	F	T	$0.8 \cdot 0.6 \cdot 0.5 = 0.24$
F	F	T	F	0
F	F	F	T	$0.8 \cdot 0.4 \cdot 0.5 = 0.16$
				0.56

Applications in probabilistic inference.

WMC is **#P-complete**.

We are working on new solving techniques.

Problem: not enough benchmarks.

Project: create new benchmark set.

variable v	$w(v = T)$	$w(v = F)$
x_1	0.2	0.8
x_2	0.6	0.4
x_3	0.5	0.5

Tian Sang, Paul Bearne, Henry Kautz
Performing Bayesian inference by weighted model counting
 National Conference on Artificial Intelligence, 2005

Mark Chavira and Adnan Darwiche
On probabilistic inference by weighted model counting
 Artificial Intelligence, 2008

Dan Roth
On the hardness of probabilistic reasoning
 Artificial Intelligence, 1996

References



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