Inference for SRL

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Chapter 1

Probabilistic Inference Using Weighted Model Counting

1.1

1.1.1 ENC 1

For our conversion from the cancer bayesian network to ENC1 please look at 2.1 in our appendix.

1.1.2 ENC 2

As for ENC1 please look at 2.2 in our appendix.

1.2

The CNF of the monty hall problem is given in image 1

```
CNF:
select_door(1)
∧ win_keep ∨ -prize(1)
∧ -win_keep ∨ prize(1)
∧ open_door(2) ∨ prize(2) ∨ -prize(3)
∧ -open_door(2) ∨ -prize(2)
∧ -open_door(2) ∨ prize(3)
∧ open_door(3) ∨ prize(3) ∨ -prize(2)
∧ -open_door(3) ∨ -prize(3)
∧ -open_door(3) ∨ prize(2)
∧ win_switch ∨ -prize(2) ∨ open_door(2)
∧ win_switch ∨ -prize(3) ∨ open_door(3)
∧ -win_switch ∨ prize(2) ∨ prize(3)
∧ -win_switch ∨ prize(2) ∨ -open_door(3)
∧ -win_switch ∨ -open_door(2) ∨ prize(3)
∧ -win_switch ∨ -open_door(2) ∨ -open_door(3)
Queries:
query(prize(1))
query(prize(2))
query(prize(3))
query(select_door(1))
query(win_keep)
query(win_switch)
```

Figure 1.1: Grounded problog cnf

TODO WEIGHTS

1.3

1.3.1

We will use mini2CD and Cachet as WMC counters.

mini2CD

- ENC1:

```
Constructing CNF... DONE
CNF stats:
  Vars=30 / Clauses=74
  CNF Time      0.000s
Constructing vtree (from primal graph)... DONE
Vtree stats:
  Vtree widths: con<=5, c_con=40 v_con=5
  Vtree Time    0.003s
Counting... DONE
  Learned clauses       0
Cache stats:
  hit rate      16.7%
  lookups       12
  ent count     10
  ent memory    0.5 KB
  ht  memory    152.6 MB
  clists        1.0 ave, 1 max
  keys          4.2b ave, 6.0b max, 3.0b min
Count stats:
  Count Time    0.000s
  Count/Probability     1.00000
Total Time: 0.128s
```

Figure 1.2: Grounded problog cnf

- ENC2:

```
Constructing CNF... DONE
CNF stats:
  Vars=20 / Clauses=30
  CNF Time      0.000s
Constructing vtree (from primal graph)... DONE
Vtree stats:
  Vtree widths: con<=6, c_con=16 v_con=6
  Vtree Time    0.002s
Counting... DONE
  Learned clauses       0
Cache stats:
  hit rate      23.1%
  lookups       26
  ent count     20
  ent memory    1.0 KB
  ht  memory    152.6 MB
  clists        1.0 ave, 1 max
  keys          1.8b ave, 3.0b max, 1.0b min
Count stats:
  Count Time    0.000s
  Count/Probability     1.00000
Total Time: 0.164s
```

Figure 1.3: Grounded problog cnf

- Prolog first:

Cachet

- ENC1:

```
Number of total components          11
Number of split components          2
Number of non-split components      5
Number of SAT residual formula      12
Number of trivial components        0
Number of changed components        0
Number of adjusted components       0
First component split level         1

Number of Decisions                 11
Max Decision Level                  5
Number of Variables                 30
Original Num Clauses                74
Original Num Literals               172
Added Conflict Clauses              0
Added Conflict Literals             0
Deleted Unrelevant clauses          0
Deleted Unrelevant literals         0
Number of Implications              124
Total Run Time                      0.018895

Satisfying probability              8.72319e-08
Number of solutions                 93.6645
```

Figure 1.4: Grounded problog cnf

- ENC2:

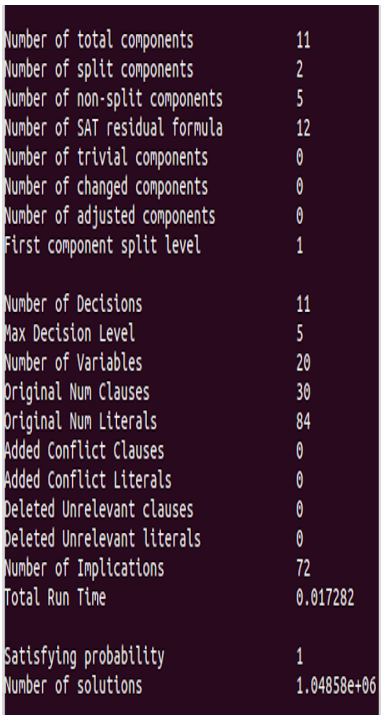

Figure 1.5: Grounded problog cnf

- Prolog first:

For ENC1 we see that with Cachet we get a satisfying probability of almost 0. This is due to the fact that with ENC1 all our negative literals have a weight of 1, while Cachet expects that a literal + its negation = 1.

1.3.2. Difference between the used WMC's

minic2d Vs Cachet

Minic2d and Cachet are both weighted model counters but how to do this is quite different. Minic2d is a top down compiler that compiles CNF's into a SDD which results in a faster system but it also uses less space while Cachet is an algorithm that uses formula caching together with clause learning and component analysis. Minic2d needs vtree's to be able to compile the CNF's into an SDD. TThey, however, both use things from the SAT literature. They both use clause learning and component caching as to be able to reuse components that later appear again in the search. Cachet on the other hand also uses some other things from SAT literature like an explicit on the fly calculation of connected components. This is different in minic2d as it uses a vtree to identify disconnected CNF components.

[1] [2]

1.3.3 Overview of computational requirements

NOG DOEN.

1.4 Knowledge compilation

Chapter 2

Appendix

2.1 ENC1

Indicator clauses:

$$(\neg\, \lambda_{PollutionLow} \vee \neg\, \lambda_{PollutionHigh}) \wedge (\lambda_{PollutionLow} \vee \lambda_{PollutionHigh}) \wedge (\neg\, \lambda_{SmokerTrue} \vee \neg\, \lambda_{SmokerFalse}) \wedge (\lambda_{SmokerTrue} \vee \lambda_{SmokerFalse}) \wedge (\neg\, \lambda_{CancerTrue} \vee \neg\, \lambda_{CancerFalse}) \wedge (\lambda_{CancerTrue} \vee \lambda_{CancerFalse}) \wedge (\neg\, \lambda_{XrayPositive} \vee \neg\, \lambda_{XrayNegative}) \wedge (\lambda_{XrayPositive} \vee \lambda_{XrayNegative}) \wedge (\neg\, \lambda_{DyspnoeaTrue} \vee \neg\, \lambda_{DyspnoeaFalse}) \wedge (\lambda_{DyspnoeaTrue} \vee \lambda_{DyspnoeaFalse})$$

Parameter clauses:

$$(\neg\, \lambda_{PollutionLow} \vee \theta_{PollutionLow}) \wedge (\lambda_{PollutionLow} \vee \neg\, \theta_{PollutionLow}) \wedge (\neg\, \lambda_{PollutionHigh} \vee \theta_{PollutionHigh}) \wedge (\lambda_{PollutionHigh} \vee \neg\, \theta_{PollutionHigh}) \wedge (\neg\, \lambda_{SmokerTrue} \vee \theta_{SmokerTrue}) \wedge (\lambda_{SmokerTrue} \vee \neg\, \theta_{SmokerTrue}) \wedge (\neg\, \lambda_{SmokerFalse} \vee \theta_{SmokerFalse}) \wedge (\lambda_{SmokerFalse} \vee \neg\, \theta_{SmokerFalse}) \wedge (\neg\, \lambda_{PollutionLow} \vee \neg\, \lambda_{SmokerTrue} \vee \neg\, \lambda_{CancerTrue} \vee \theta_{CancerTrue|PollutionLow,SmokerTrue}) \wedge (\lambda_{PollutionLow} \vee \neg\, \theta_{CancerTrue|PollutionLow,SmokerTrue}) \wedge (\lambda_{SmokerTrue} \vee \neg\, \theta_{CancerTrue|PollutionLow,SmokerTrue}) \wedge (\lambda_{CancerTrue} \vee \neg\, \theta_{CancerTrue|PollutionLow,SmokerTrue}) \wedge (\neg\, \lambda_{PollutionLow} \vee \neg\, \lambda_{SmokerTrue} \vee \neg\, \lambda_{CancerFalse} \vee \theta_{CancerFalse|PollutionLow,SmokerTrue}) \wedge (\lambda_{PollutionLow} \vee \neg\, \theta_{CancerFalse|PollutionLow,SmokerTrue}) \wedge (\lambda_{SmokerTrue} \vee \neg\, \theta_{CancerFalse|PollutionLow,SmokerTrue}) \wedge (\lambda_{CancerFalse} \vee \neg\, \theta_{CancerFalse|PollutionLow,SmokerTrue}) \wedge (\neg\, \lambda_{PollutionLow} \vee \neg\, \lambda_{SmokerFalse} \vee \neg\, \lambda_{CancerTrue} \vee \theta_{CancerTrue|PollutionLow,SmokerFalse}) \wedge (\lambda_{PollutionLow} \vee \neg\, \theta_{CancerTrue|PollutionLow,SmokerFalse}) \wedge (\lambda_{SmokerFalse} \vee \neg\, \theta_{CancerTrue|PollutionLow,SmokerFalse}) \wedge (\lambda_{CancerTrue} \vee \neg\, \theta_{CancerTrue|PollutionLow,SmokerFalse}) \wedge (\neg\, \lambda_{PollutionLow} \vee \neg\, \lambda_{SmokerFalse} \vee \neg\, \lambda_{CancerFalse} \vee \theta_{CancerFalse|PollutionLow,SmokerFalse}) \wedge (\lambda_{PollutionLow} \vee \neg\, \theta_{CancerFalse|PollutionLow,SmokerFalse}) \wedge (\lambda_{SmokerFalse} \vee \neg\, \theta_{CancerFalse|PollutionLow,SmokerFalse}) \wedge (\lambda_{CancerFalse} \vee \neg\, \theta_{CancerFalse|PollutionLow,SmokerFalse}) \wedge (\neg\, \lambda_{PollutionHigh} \vee \neg\, \lambda_{SmokerTrue} \vee \neg\, \lambda_{CancerTrue} \vee \theta_{CancerTrue|PollutionHigh,SmokerTrue}) \wedge (\lambda_{PollutionHigh} \vee \neg\, \theta_{CancerTrue|PollutionHigh,SmokerTrue}) \wedge (\lambda_{SmokerTrue} \vee \neg\, \theta_{CancerTrue|PollutionHigh,SmokerTrue}) \wedge (\lambda_{CancerTrue} \vee \neg$$

$$\theta_{CancerTrue|PollutionHigh,SmokerTrue}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerTrue} \vee \neg \lambda_{CancerFalse} \vee \theta_{CancerFalse|PollutionHigh,SmokerTrue}) \wedge (\lambda_{PollutionHigh} \vee \neg \theta_{CancerFalse|PollutionHigh,SmokerTrue}) \wedge (\lambda_{SmokerTrue} \vee \neg \theta_{CancerFalse|PollutionHigh,SmokerTrue}) \wedge (\lambda_{CancerFalse} \vee \neg \theta_{CancerFalse|PollutionHigh,SmokerTrue}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerFalse} \vee \neg \lambda_{CancerTrue} \vee \theta_{CancerTrue|PollutionHigh,SmokerFalse}) \wedge (\lambda_{PollutionHigh} \vee \neg \theta_{CancerTrue|PollutionHigh,SmokerFalse}) \wedge (\lambda_{SmokerFalse} \vee \neg \theta_{CancerTrue|PollutionHigh,SmokerFalse}) \wedge (\lambda_{CancerTrue} \vee \neg \theta_{CancerTrue|PollutionHigh,SmokerFalse}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerFalse} \vee \neg \lambda_{CancerFalse} \vee \theta_{CancerFalse|PollutionHigh,SmokerFalse}) \wedge (\lambda_{PollutionHigh} \vee \neg \theta_{CancerFalse|PollutionHigh,SmokerFalse}) \wedge (\lambda_{SmokerFalse} \vee \neg \theta_{CancerFalse|PollutionHigh,SmokerFalse}) \wedge (\lambda_{CancerFalse} \vee \neg \theta_{CancerFalse|PollutionHigh,SmokerFalse}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \lambda_{XrayPositive} \vee \theta_{XrayPositive|CancerTrue}) \wedge (\lambda_{CancerTrue} \vee \neg \theta_{XrayPositive|CancerTrue}) \wedge (\lambda_{XrayPositive} \vee \neg \theta_{XrayPositive|CancerTrue}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \lambda_{XrayNegative} \vee \theta_{XrayNegative|CancerTrue}) \wedge (\lambda_{CancerTrue} \vee \neg \theta_{XrayNegative|CancerTrue}) \wedge (\lambda_{XrayNegative} \vee \neg \theta_{XrayNegative|CancerTrue}) \wedge (\neg \lambda_{CancerFalse} \vee \neg \lambda_{XrayPositive} \vee \theta_{XrayPositive|CancerFalse}) \wedge (\lambda_{CancerFalse} \vee \neg \theta_{XrayPositive|CancerFalse}) \wedge (\lambda_{XrayPositive} \vee \neg \theta_{XrayPositive|CancerFalse}) \wedge (\neg \lambda_{CancerFalse} \vee \neg \lambda_{XrayNegative} \vee \theta_{XrayNegative|CancerFalse}) \wedge (\lambda_{CancerFalse} \vee \neg \theta_{XrayNegative|CancerFalse}) \wedge (\lambda_{XrayNegative} \vee \neg \theta_{XrayNegative|CancerFalse}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \lambda_{DyspnoeaTrue} \vee \theta_{DyspnoeaTrue|CancerTrue}) \wedge (\lambda_{CancerTrue} \vee \neg \theta_{DyspnoeaTrue|CancerTrue}) \wedge (\lambda_{DyspnoeaTrue} \vee \neg \theta_{DyspnoeaTrue|CancerTrue}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \lambda_{DyspnoeaFalse} \vee \theta_{DyspnoeaFalse|CancerTrue}) \wedge (\lambda_{CancerTrue} \vee \neg \theta_{DyspnoeaFalse|CancerTrue}) \wedge (\lambda_{DyspnoeaFalse} \vee \neg \theta_{DyspnoeaFalse|CancerTrue}) \wedge (\neg \lambda_{CancerFalse} \vee \neg \lambda_{DyspnoeaTrue} \vee \theta_{DyspnoeaTrue|CancerFalse}) \wedge (\lambda_{CancerFalse} \vee \neg \theta_{DyspnoeaTrue|CancerFalse}) \wedge (\lambda_{DyspnoeaTrue} \vee \neg \theta_{DyspnoeaTrue|CancerFalse}) \wedge (\neg \lambda_{CancerFalse} \vee \neg \lambda_{DyspnoeaFalse} \vee \theta_{DyspnoeaFalse|CancerFalse}) \wedge (\lambda_{CancerFalse} \vee \neg \theta_{DyspnoeaFalse|CancerFalse}) \wedge (\lambda_{DyspnoeaFalse} \vee \neg \theta_{DyspnoeaFalse|CancerFalse})$$

Weights:

$\mathrm{W}(\lambda_{PollutionLow}) = 1.00$
$\mathrm{W}(\neg\lambda_{PollutionLow}) = 1.00$
$\mathrm{W}(\lambda_{PollutionHigh}) = 1.00$
$\mathrm{W}(\neg\lambda_{PollutionHigh}) = 1.00$
$\mathrm{W}(\lambda_{SmokerTrue}) = 1.00$
$\mathrm{W}(\neg\lambda_{SmokerTrue}) = 1.00$
$\mathrm{W}(\lambda_{SmokerFalse}) = 1.00$
$\mathrm{W}(\neg\lambda_{SmokerFalse}) = 1.00$
$\mathrm{W}(\lambda_{CancerTrue}) = 1.00$
$\mathrm{W}(\neg\lambda_{CancerTrue}) = 1.00$
$\mathrm{W}(\lambda_{CancerFalse}) = 1.00$
$\mathrm{W}(\neg\lambda_{CancerFalse}) = 1.00$
$\mathrm{W}(\lambda_{XrayPositive}) = 1.00$
$\mathrm{W}(\neg\lambda_{XrayPositive}) = 1.00$
$\mathrm{W}(\lambda_{XrayNegative}) = 1.00$
$\mathrm{W}(\neg\lambda_{XrayNegative}) = 1.00$
$\mathrm{W}(\lambda_{DyspnoeaTrue}) = 1.00$
$\mathrm{W}(\neg\lambda_{DyspnoeaTrue}) = 1.00$

$\mathrm{W}(\lambda_{DyspnoeaFalse}) = 1.00$
$\mathrm{W}(\neg\lambda_{DyspnoeaFalse}) = 1.00$
$\mathrm{W}(\theta_{PollutionLow}) = 0.90$
$\mathrm{W}(\neg\theta_{PollutionLow}) = 1.00$
$\mathrm{W}(\theta_{PollutionHigh}) = 0.10$
$\mathrm{W}(\neg\theta_{PollutionHigh}) = 1.00$
$\mathrm{W}(\theta_{SmokerTrue}) = 0.30$
$\mathrm{W}(\neg\theta_{SmokerTrue}) = 1.00$
$\mathrm{W}(\theta_{SmokerFalse}) = 0.70$
$\mathrm{W}(\neg\theta_{SmokerFalse}) = 1.00$
$\mathrm{W}(\theta_{CancerTrue|PollutionLow,SmokerTrue}) = 0.03$
$\mathrm{W}(\neg\theta_{CancerTrue|PollutionLow,SmokerTrue}) = 1.00$
$\mathrm{W}(\theta_{CancerFalse|PollutionLow,SmokerTrue}) = 0.97$
$\mathrm{W}(\neg\theta_{CancerFalse|PollutionLow,SmokerTrue}) = 1.00$
$\mathrm{W}(\theta_{CancerTrue|PollutionLow,SmokerFalse}) = 0.00$
$\mathrm{W}(\neg\theta_{CancerTrue|PollutionLow,SmokerFalse}) = 1.00$
$\mathrm{W}(\theta_{CancerFalse|PollutionLow,SmokerFalse}) = 1.00$
$\mathrm{W}(\neg\theta_{CancerFalse|PollutionLow,SmokerFalse}) = 1.00$
$\mathrm{W}(\theta_{CancerTrue|PollutionHigh,SmokerTrue}) = 0.05$
$\mathrm{W}(\neg\theta_{CancerTrue|PollutionHigh,SmokerTrue}) = 1.00$
$\mathrm{W}(\theta_{CancerFalse|PollutionHigh,SmokerTrue}) = 0.95$
$\mathrm{W}(\neg\theta_{CancerFalse|PollutionHigh,SmokerTrue}) = 1.00$
$\mathrm{W}(\theta_{CancerTrue|PollutionHigh,SmokerFalse}) = 0.02$
$\mathrm{W}(\neg\theta_{CancerTrue|PollutionHigh,SmokerFalse}) = 1.00$
$\mathrm{W}(\theta_{CancerFalse|PollutionHigh,SmokerFalse}) = 0.98$
$\mathrm{W}(\neg\theta_{CancerFalse|PollutionHigh,SmokerFalse}) = 1.00$
$\mathrm{W}(\theta_{XrayPositive|CancerTrue}) = 0.90$
$\mathrm{W}(\neg\theta_{XrayPositive|CancerTrue}) = 1.00$
$\mathrm{W}(\theta_{XrayNegative|CancerTrue}) = 0.10$
$\mathrm{W}(\neg\theta_{XrayNegative|CancerTrue}) = 1.00$
$\mathrm{W}(\theta_{XrayPositive|CancerFalse}) = 0.20$
$\mathrm{W}(\neg\theta_{XrayPositive|CancerFalse}) = 1.00$
$\mathrm{W}(\theta_{XrayNegative|CancerFalse}) = 0.80$
$\mathrm{W}(\neg\theta_{XrayNegative|CancerFalse}) = 1.00$
$\mathrm{W}(\theta_{DyspnoeaTrue|CancerTrue}) = 0.65$
$\mathrm{W}(\neg\theta_{DyspnoeaTrue|CancerTrue}) = 1.00$
$\mathrm{W}(\theta_{DyspnoeaFalse|CancerTrue}) = 0.35$
$\mathrm{W}(\neg\theta_{DyspnoeaFalse|CancerTrue}) = 1.00$
$\mathrm{W}(\theta_{DyspnoeaTrue|CancerFalse}) = 0.30$
$\mathrm{W}(\neg\theta_{DyspnoeaTrue|CancerFalse}) = 1.00$
$\mathrm{W}(\theta_{DyspnoeaFalse|CancerFalse}) = 0.70$
$\mathrm{W}(\neg\theta_{DyspnoeaFalse|CancerFalse}) = 1.00$

2.2 ENC2

Indicator clauses

$$(\neg\ \lambda_{PollutionLow} \vee \neg\ \lambda_{PollutionHigh}) \wedge (\lambda_{PollutionLow} \vee \lambda_{PollutionHigh}) \wedge (\neg$$

$$\lambda_{SmokerTrue} \vee \neg \lambda_{SmokerFalse}) \wedge (\lambda_{SmokerTrue} \vee \lambda_{SmokerFalse}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \lambda_{CancerFalse}) \wedge (\lambda_{CancerTrue} \vee \lambda_{CancerFalse}) \wedge (\neg \lambda_{XrayPositive} \vee \neg \lambda_{XrayNegative}) \wedge (\lambda_{XrayPositive} \vee \lambda_{XrayNegative}) \wedge (\neg \lambda_{DyspnoeaTrue} \vee \neg \lambda_{DyspnoeaFalse}) \wedge (\lambda_{DyspnoeaTrue} \vee \lambda_{DyspnoeaFalse})$$

Parameter clauses

$$(\neg \rho_{PollutionLow} \vee \lambda_{PollutionLow}) \wedge (\rho_{PollutionLow} \vee \lambda_{PollutionHigh}) \wedge (\neg \rho_{SmokerTrue} \vee \lambda_{SmokerTrue}) \wedge (\rho_{SmokerTrue} \vee \lambda_{SmokerFalse}) \wedge (\neg \lambda_{PollutionLow} \vee \neg \lambda_{SmokerTrue} \vee \neg \rho_{CancerTrue|PollutionLow,SmokerTrue} \vee \lambda_{CancerTrue}) \wedge (\neg \lambda_{PollutionLow} \vee \neg \lambda_{SmokerTrue} \vee \rho_{CancerTrue|PollutionLow,SmokerTrue} \vee \lambda_{CancerFalse}) \wedge (\neg \lambda_{PollutionLow} \vee \neg \lambda_{SmokerFalse} \vee \neg \rho_{CancerTrue|PollutionLow,SmokerFalse} \vee \lambda_{CancerTrue}) \wedge (\neg \lambda_{PollutionLow} \vee \neg \lambda_{SmokerFalse} \vee \rho_{CancerTrue|PollutionLow,SmokerFalse} \vee \lambda_{CancerFalse}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerTrue} \vee \neg \rho_{CancerTrue|PollutionHigh,SmokerTrue} \vee \lambda_{CancerTrue}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerTrue} \vee \rho_{CancerTrue|PollutionHigh,SmokerTrue} \vee \lambda_{CancerFalse}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerFalse} \vee \neg \rho_{CancerTrue|PollutionHigh,SmokerFalse} \vee \lambda_{CancerTrue}) \wedge (\neg \lambda_{PollutionHigh} \vee \neg \lambda_{SmokerFalse} \vee \rho_{CancerTrue|PollutionHigh,SmokerFalse} \vee \lambda_{CancerFalse}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \rho_{XrayPositive|CancerTrue} \vee \lambda_{XrayPositive}) \wedge (\neg \lambda_{CancerTrue} \vee \rho_{XrayPositive|CancerTrue} \vee \lambda_{XrayNegative}) \wedge (\neg \lambda_{CancerFalse} \vee \neg \rho_{XrayPositive|CancerFalse} \vee \lambda_{XrayPositive}) \wedge (\neg \lambda_{CancerFalse} \vee \rho_{XrayPositive|CancerFalse} \vee \lambda_{XrayNegative}) \wedge (\neg \lambda_{CancerTrue} \vee \neg \rho_{DyspnoeaTrue|CancerTrue} \vee \lambda_{DyspnoeaTrue}) \wedge (\neg \lambda_{CancerTrue} \vee \rho_{DyspnoeaTrue|CancerTrue} \vee \lambda_{DyspnoeaFalse}) \wedge (\neg \lambda_{CancerFalse} \vee \neg \rho_{DyspnoeaTrue|CancerFalse} \vee \lambda_{DyspnoeaTrue}) \wedge (\neg \lambda_{CancerFalse} \vee \rho_{DyspnoeaTrue|CancerFalse} \vee \lambda_{DyspnoeaFalse})$$

Weights

$\mathrm{W}(\lambda_{PollutionLow}) = 1.00$
$\mathrm{W}(\neg \lambda_{PollutionLow}) = 1.00$
$\mathrm{W}(\lambda_{PollutionHigh}) = 1.00$
$\mathrm{W}(\neg \lambda_{PollutionHigh}) = 1.00$
$\mathrm{W}(\lambda_{SmokerTrue}) = 1.00$
$\mathrm{W}(\neg \lambda_{SmokerTrue}) = 1.00$
$\mathrm{W}(\lambda_{SmokerFalse}) = 1.00$
$\mathrm{W}(\neg \lambda_{SmokerFalse}) = 1.00$
$\mathrm{W}(\lambda_{CancerTrue}) = 1.00$
$\mathrm{W}(\neg \lambda_{CancerTrue}) = 1.00$
$\mathrm{W}(\lambda_{CancerFalse}) = 1.00$
$\mathrm{W}(\neg \lambda_{CancerFalse}) = 1.00$
$\mathrm{W}(\lambda_{XrayPositive}) = 1.00$
$\mathrm{W}(\neg \lambda_{XrayPositive}) = 1.00$
$\mathrm{W}(\lambda_{XrayNegative}) = 1.00$
$\mathrm{W}(\neg \lambda_{XrayNegative}) = 1.00$
$\mathrm{W}(\lambda_{DyspnoeaTrue}) = 1.00$
$\mathrm{W}(\neg \lambda_{DyspnoeaTrue}) = 1.00$
$\mathrm{W}(\lambda_{DyspnoeaFalse}) = 1.00$
$\mathrm{W}(\neg \lambda_{DyspnoeaFalse}) = 1.00$
$\mathrm{W}(\rho_{PollutionLow}) = 0.90$

$\mathrm{W}(\neg\ \rho_{PollutionLow}) = 0.10$
$\mathrm{W}(\rho_{SmokerTrue}) = 0.30$
$\mathrm{W}(\neg\ \rho_{SmokerTrue}) = 0.70$
$\mathrm{W}(\rho_{CancerTrue|PollutionLow,SmokerTrue}) = 0.03$
$\mathrm{W}(\neg\ \rho_{CancerTrue|PollutionLow,SmokerTrue}) = 0.97$
$\mathrm{W}(\rho_{CancerTrue|PollutionLow,SmokerFalse}) = 0.00$
$\mathrm{W}(\neg\ \rho_{CancerTrue|PollutionLow,SmokerFalse}) = 1.00$
$\mathrm{W}(\rho_{CancerTrue|PollutionHigh,SmokerTrue}) = 0.05$
$\mathrm{W}(\neg\ \rho_{CancerTrue|PollutionHigh,SmokerTrue}) = 0.95$
$\mathrm{W}(\rho_{CancerTrue|PollutionHigh,SmokerFalse}) = 0.02$
$\mathrm{W}(\neg\ \rho_{CancerTrue|PollutionHigh,SmokerFalse}) = 0.98$
$\mathrm{W}(\rho_{XrayPositive|CancerTrue}) = 0.90$
$\mathrm{W}(\neg\ \rho_{XrayPositive|CancerTrue}) = 0.10$
$\mathrm{W}(\rho_{XrayPositive|CancerFalse}) = 0.20$
$\mathrm{W}(\neg\ \rho_{XrayPositive|CancerFalse}) = 0.80$
$\mathrm{W}(\rho_{DyspnoeaTrue|CancerTrue}) = 0.65$
$\mathrm{W}(\neg\ \rho_{DyspnoeaTrue|CancerTrue}) = 0.35$
$\mathrm{W}(\rho_{DyspnoeaTrue|CancerFalse}) = 0.30$
$\mathrm{W}(\neg\ \rho_{DyspnoeaTrue|CancerFalse}) = 0.70$

Bibliography

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