Izvrši račun enumeracijom

$$P(b, j, m) = \sum_e \sum_a P(b, e, a, j, m)$$

$$= \sum_e \sum_a P(b) \cdot P(e) \cdot P(a|b,e) \cdot P(j|a) \cdot P(m|a)$$

$$= P(b) \cdot P(e) \cdot P(a|b,e) \cdot P(j|a) \cdot P(m|a)$$
$$+ P(b) \cdot P(\neg e) \cdot P(a|b,\neg e) \cdot P(j|a) \cdot P(m|a)$$
$$+ P(b) \cdot P(e) \cdot P(\neg a|b,e) \cdot P(j|\neg a) \cdot P(m|\neg a)$$
$$+ P(b) \cdot P(\neg e) \cdot P(\neg a|b,\neg e) \cdot P(j|\neg a) \cdot P(m|\neg a)$$

$= 0.001 \cdot [$

$0.002 \cdot 0.95 \cdot 0.9 \cdot 0.7$	0.001197
$0.998 \cdot 0.94 \cdot 0.9 \cdot 0.7$	0.5910156
$0.002 \cdot 0.05 \cdot 0.05 \cdot 0.01$	0.00000005
$0.998 \cdot 0.06 \cdot 0.05 \cdot 0.01$	0.00002994
	0.59224259

$= 0.001 \cdot [0.001197 + 0.5910156 + 0.00000005 + 0.00002994]$

$= \underline{0.000\,592\,242\,59}$

Za $B = \neg b$ $(-b)$:

$P(\neg b|j,m)$

$= 0.999 \cdot [$

$0.002 \cdot P(a|\neg b,e) \cdot 0.63$	0.000 365 4
$0.998 \cdot 0.001 \cdot 0.63$	0.000 628 74
$P(a|\neg b,\neg e)$	
$0.002 \cdot \underset{0.71}{P(\neg a,\neg b,e)} \cdot 0.0005$	0.000 000 71
$0.998 \cdot P(\neg a|\neg b,\neg e) \cdot 0.0005$	0.000 498 501
	0.001 493 351

$= \underline{0.001\,491\,857\,649}$

zbroj $= 0.002084100239$ $\quad \alpha = \frac{1}{\ldots} = 479.8233699.$

$$\Rightarrow \boxed{P(B|j,m) = \langle 0.284172, 0.715828 \rangle}$$

Vrijedi $\alpha = \frac{1}{P(j,m)}$, tj. zbroj $= P(j,m) = 0.002084\ldots$

Eliminacija

$f_4(A) = \langle P(j|a) \;\; P(j|\neg a)\rangle = \langle 0.90, 0.05\rangle$

$f_5(A) = \langle P(m|a) \;\; P(m|\neg a)\rangle = \langle 0.70, 0.01\rangle$

$f_3(A,B,E) = \langle P(a|b,e), \ldots, P(\neg a|\neg b,\neg e)\rangle$

$= \langle 0.95 \;\; 0.05 \;\; 0.94 \;\; 0.06 \;\; 0.29 \;\; 0.71 \;\; 0.001 \;\; 0.999\rangle$

$a \quad \neg a \quad a \quad \neg a \quad a \quad \neg a \quad a \quad \neg a$

Množenje ali združevanje faktora – srečamo f_4, f_5 ovise samo o A

$f_3(A,B,E) \times \underbrace{f_4(A) \times f_5(A)}$ ima ISTO 8 elem.

$\langle 0.63, 0.0005\rangle$

$a \quad \neg a$

Produkt:

A	B	E	produkt	
a	b	e	0.95	$\cdot 0.63 =$
a	b	$\neg e$	0.94	
a	$\neg b$	e	0.29	
a	$\neg b$	$\neg e$	0.001	
$\neg a$	b	e	0.05	$\cdot 0.0005 =$
$\neg a$	b	$\neg e$	0.06	
$\neg a$	$\neg b$	e	0.71	
$\neg a$	$\neg b$	$\neg e$	0.999	

NE formirah cijelu

$f_3(a,B,E) \cdot f_4(a) \cdot f_5(a) = 0.63 \cdot \langle 0.95 \;\; 0.94 \;\; 0.29 \;\; 0.001\rangle$

$f_3(\neg a,B,E) \cdot f_4(\neg a) \cdot f_5(\neg a) = 0.0005 \langle 0.05 \;\; 0.06 \;\; 0.71 \;\; 0.999\rangle$

prvi = $\langle 0.598\,5 \quad 0.592\,2 \quad 0.182\,7 \quad 0.000\,63\rangle$

drugi = $\langle 0.000\,025 \quad 0.000\,03 \quad 0.000\,355 \quad 0.000\,499\,5\rangle$

zbroj $\boxed{f_6(B,E) = \langle 0.598\,525 \quad 0.592\,23 \quad 0.183\,055 \quad 0.001\,129\,5\rangle}$

$b,e \quad b,\neg e \quad \neg b,e \quad \neg b,\neg e$

Ostaje izračunati

$$P(B \mid j,m) = \alpha \cdot f_1(B) \times \sum_e f_2(E) \times f_6(B,E)$$

Eliminacija E = računamo $f_2(E) = \langle 0.002 \;\; 0.998 \rangle$

$$f_7(B) = \sum_e f_2(E) \times f_6(B,E)$$

$$= f_2(e) \times \underbrace{f_6(B,e)}_{\text{duljina } 2} + f_2(\neg e) \times \underbrace{f_6(B,\neg e)}_{\text{duljina } 2}$$

$$= 0.002 \cdot \langle 0.598\,525 \;\; 0.183\,055 \rangle$$
$$+ 0.998 \langle 0.592\,23 \;\; 0.001\,129\,5 \rangle$$

$$= \langle 0.001\,197\,05 \;\; 0.000\,366\,11 \rangle$$
$$+ \langle 0.591\,045\,54 \;\; 0.001\,127\,241 \rangle$$

$$f_7(B) = \langle 0.592\,242\,59 \;\; 0.001\,493\,351 \rangle$$
$$\qquad\qquad b \qquad\qquad\quad \neg b$$

$$f_1(B) \times f_7(B), \quad \text{uz } f_1(B) = \langle 0.001 \;\; 0.999 \rangle$$

Računamo vektor/faktor $f_8(B) = f_1(B) \times f_7(B)$

$$= \langle 0.001 \cdot 0.592\,242\,59 \;\; 0.999 \cdot 0.001\,493\,351 \rangle$$

$$= \langle 0.000\,592\,242\,59 \;\; 0.001\,491\,857\,649 \rangle$$

Rezultat $P(B \mid j,m) = \alpha \cdot f_8(B)$ α da zbroj bude 1

Zbroj elem. u $f_8(B)$ = 0.002 084 100 239

$$\alpha = \frac{1}{\text{broj}} = 479.823\,369\,954\ldots$$

$$\Rightarrow \boxed{P(B \mid j,m) = \langle 0.284\,172\ldots, \; 0.715\,828 \rangle}$$

Račun drugim putem – prvo eliminiramo E, pa A

Formula za račun – napisana u faktorima je

$$P(B \mid j,m) = \alpha \cdot f_1(B) \times \sum_a f_4(A) \times f_5(A) \times \sum_e f_2(E) \times f_3(A,B,E)$$

Prvo odsumiramo E iz produkta $f_2(E) \times f_3(A,B,E)$ što daje faktor $f_9(A,B)$

$$f_9(A,B) = \sum_e f_2(E) \times f_3(A,B,E)$$

$$= f_2(e) \cdot f_3(A,B,e) + f_2(\neg e) \cdot f_3(A,B,\neg e)$$

$$= 0.002 \cdot \langle \underset{a,b}{0.95} \quad \underset{a,\neg b}{0.29} \quad \underset{\neg a,b}{0.05} \quad \underset{\neg a,\neg b}{0.71} \rangle$$

$$+ 0.998 \cdot \langle 0.94 \quad 0.001 \quad 0.06 \quad 0.999 \rangle$$

$$= \langle 0.0019 \quad 0.00058 \quad 0.0001 \quad 0.00142 \rangle$$

$$+ \langle 0.93812 \quad 0.000998 \quad 0.05988 \quad 0.997002 \rangle$$

$$f_9(A,B) = \langle \underset{a,b}{0.94002} \quad \underset{a,\neg b}{0.001578} \quad \underset{\neg a,b}{0.05998} \quad \underset{\neg a,\neg b}{0.998422} \rangle$$

Sad odsumiramo A iz produkta $f_4(A) \times f_5(A) \times f_9(A,B)$ što daje faktor $f_{10}(B)$ (= ranije $f_7(B)$)

$$f_{10}(B) = \sum_a f_4(A) \times f_5(A) \times f_9(A,B)$$

$$= 0.63$$

$$= f_4(a) \cdot f_5(a) \times \langle 0.94002 \quad 0.001578 \rangle \quad f_4(a) \cdot f_5(a) = 0.63$$

$$+ f_4(\neg a) \cdot f_5(\neg a) \times \langle 0.05998 \quad 0.998422 \rangle \quad f_4(\neg a) f_5(\neg a) = 0.0005$$

$$= \langle 0.592212\,6 \quad 0.000\,994\,14 \rangle$$

$$+ \langle 0.000\,029\,99 \quad 0.000\,499\,211 \rangle$$

$$f_{10}(B) = \langle 0.592\,242\,59 \quad 0.001\,493\,351 \rangle \quad (W) = f_7(B)$$

Kraj računa $P(B \mid j,m) = \alpha \cdot f_1(B) \times f_{10}(B)$ je ISTI kao malo prije!