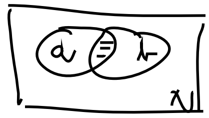
7.2:

N ... celkový počet chyb
a ... odhalil 1.
b ... 2.
c ... oba

? N

? $N-a-b+c$ ... zbývá chyb



vezmeme konkrétní chybu:

$A = \{$ odhalí 1. $\}$
$B = \{$ 2. $\}$
$C = \{$ oba $\}$

$\widehat{P(A)} = \frac{a}{N}$ ... odhad $P(A)$

$\widehat{P(B)} = \frac{b}{N}$, $\widehat{P(C)} = \frac{c}{N}$

$\hat{N} = ?$

$C = A \cap B$, A, B nezávislé jevy (zadá

$P(C) = P(A \cap B) = P(A) \cdot P(B)$ .... model

chceme: $\widehat{P(C)} \overset{!}{=} \widehat{P(A)} \cdot \widehat{P(B)}$ ... najdeme takové N, že toto

(hledáme N, které „zaji
požadovanou nezávislo

$\frac{c}{N} \overset{!}{=} \frac{a}{N} \cdot \frac{b}{N} \quad / \cdot N^2$

$c\hat{N} = ab \iff \hat{N} = \frac{ab}{c}$ ... náš odhad celk. p
chyb

↳ je to maximálně věrohodný o
(má dobré teoretické vla

$P(a, b, c$ při daném $N) = f(a, b, c, N)$

(a, b, c pozorujeme ⇒ pevné) $= L(N)$

$$\hat{N} = \arg\max_N L(N)$$

Walter Rudin: Úvod do reálné a komplexní analýzy (197

překlad: I. Netuka, J. Veselý ⇝ zbývá ... 8 ch
+ korektury

20 let používání ⇝ odhaleno 7 chyb

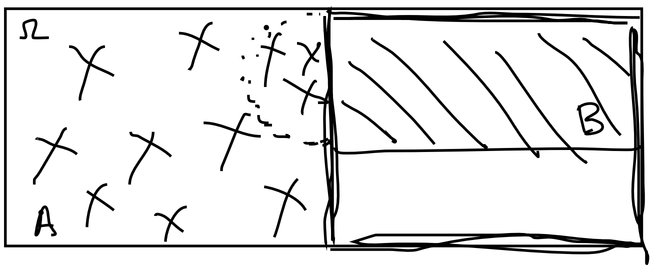
8.1:

A ... vyhraje Amarant $\quad \mathbb{P}(A) = 0{,}5 \quad \ldots \mathbb{P}(A^c) = 1 - \mathbb{P}(A) = 0{,}5$

B ... vyhraje Baklažán $\quad \mathbb{P}(B) = 0{,}3$

$$\mathbb{P}(B \mid A^c) = ? = \frac{\mathbb{P}(B \cap A^c)}{\mathbb{P}(A^c)} = \frac{3/10}{1/2} = \frac{6}{10} = 0{,}6$$

$B \subseteq A^c \Rightarrow B \cap A^c = B$



$A^c = \tilde{\Omega}$

chci: $\mathbb{P}(\Omega) = 1$

$\mathbb{P}(\Omega \mid A^c) = \frac{\mathbb{P}(\Omega \cap}{\mathbb{P}(}$

$\mathbb{P}(\tilde{\Omega} \mid A^c) = \mathbb{P}(A^c \mid$

8.2:

A_1 ... zapomene v 1. obchodě

A_2 $\quad$ 2.

A_3 $\quad$ 3.

A ... zapomene někde --- $A = A_1 \cup A_2 \cup A_3$

$\mathbb{P}(A_1) = \frac{1}{4}$ ... ze zadání $\quad \ldots \quad \mathbb{P}(A_2 \mid A_1^c) = \frac{1}{4}$

$A_2 \subseteq A_1^c$

$$\mathbb{P}(A_2) = \left[\frac{3}{4} \cdot \frac{1}{4} = \frac{3}{16}\right] = \mathbb{P}(A_2 \cap A_1^c) = \underbrace{\mathbb{P}(A_2 \mid A_1^c)}_{\frac{1}{4}} \cdot \underbrace{\mathbb{P}(A_1^c)}_{\frac{3}{4}}$$

↳ zapomene ve 2.

↳ nezapomene v 1.

$A_3 \subseteq (A_1 \cup A_2)^c$

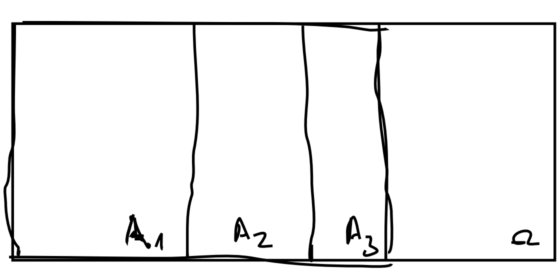
$$\mathbb{P}(A_3) = \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{1}{4} = \frac{9}{64} = \mathbb{P}(A_3 \cap (A_1 \cup A_2)^c) =$$

$$= \underbrace{\mathbb{P}(A_3 \mid (A_1 \cup A_2)^c)}_{1/4} \cdot \underbrace{\mathbb{P}((A_1 \cup A_2}_{1 - \mathbb{P}(A_1}$$

$= 1 - \frac{1}{4} -$

$= ($

$$\mathbb{P}(A) = \mathbb{P}(A_1) + \mathbb{P}(A_2) + \mathbb{P}(A_3) = \frac{37}{64}$$



$$\mathbb{P}(A_1 \mid A) = \mathbb{P}(A_1 \cap A) / \mathbb{P}(A) = \mathbb{P}(A_1) / \mathbb{P}(A) = \frac{16}{37}$$

$$\mathbb{P}(A_2 \mid A) = \ldots = \mathbb{P}(A_2) / \mathbb{P}(A) = \frac{12}{37}, \quad \mathbb{P}(A_3 \mid A) = \ldots = \frac{9}{37}$$

Hlasovací otázka 8:

$\longrightarrow \mathbb{P}(M = 6) = \frac{1}{6}$

$\longrightarrow \mathbb{P}(\text{součet lichý}) = \frac{1}{2} = \mathbb{P}(M \text{ liché}, \check{C} \text{ sudé}) + \mathbb{P}(M \text{ sudé}, \check{C} \text{ li}$

$\underset{NZ}{=} \mathbb{P}(M \text{ liché}) \cdot \mathbb{P}(\check{C} \text{ sudé}) + \mathbb{P}(M \text{ sudé}) \cdot \mathbb{P}(\check{C} \text{ liché}) = \frac{1}{2} \cdot \frac{1}{2} + \frac{1}{2} \cdot$

$\longrightarrow \mathbb{P}(M = 6, \text{ součet lichý}) = \mathbb{P}(M = 6, \check{C} \text{ liché}) = \mathbb{P}(\{(6,1), (6,3), ($

$= \frac{3}{36} = \frac{1}{12}$

$(M, \check{C})$ ... 36 m

$\frac{1}{12} = \frac{1}{6} \cdot \frac{1}{2} \Rightarrow$ jevy jsou nezávislé $\Rightarrow \boxed{D}$

$\mathbb{P}(M = 6 \mid \text{součet lichý}) = \dfrac{1/12}{1/2} = \frac{1}{6} = \mathbb{P}(M = 6)$

$\mathbb{P}(\text{součet lichý} \mid M = 6) = \dfrac{1/12}{1/6} = \frac{1}{2} = \mathbb{P}(\text{součet lichý})$