15.10.2020.

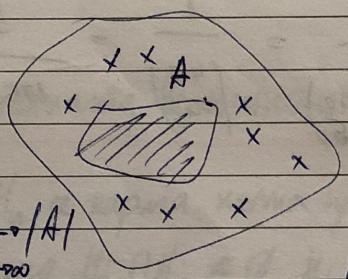
$\Omega = \{1, 2, \dots N\}$ $\quad P_i = \frac{1}{N}$

$\Omega = \{w_1, w_2, \dots w_N, \dots\}$

$\{p_1, p_2, \dots p_N, \dots\}$ $\quad p_i \geq 0$ $\quad \sum_{i=1}^{\infty} p_i = 1$

$\mathbb{P}(\{w_i\}) = p_i$; $i \geq 1$ $\quad A \subseteq \Omega$ $\quad \mathbb{P}(A) = \sum_{w_i \in A} p_i$

Геометрична вероятност.



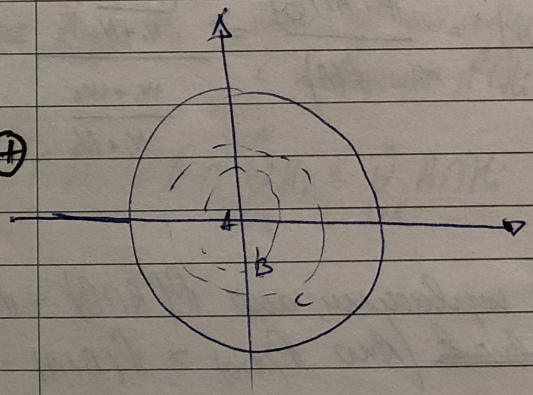
$\Omega \subseteq R^2$ $\quad |\Omega| = \int_{\Omega} dx < \infty$

$\mathbb{P}(A) = \frac{|A|}{|\Omega|}$; всяко A отворено

$\frac{A(N)}{N} \xrightarrow[N \to \infty]{} |A|$

Равномерна вероятност в/у Ω

$\mathbb{P}(\{x\}) = \frac{|\{x\}|}{|\Omega|} = 0$



$\Omega = \{x^2 + y^2 \leq 1\}$; $A = \{x^2 + y^2 \leq \frac{1}{4}\}$

$B = \{\frac{1}{4} \leq x^2 + y^2 \leq \frac{1}{2}\}$

$C = \{\frac{1}{2} < x^2 + y^2 \leq 1\}$

Дефиниция (Вероятностно пространство) Тройката $(\Omega, \mathcal{A}, \mathbb{P})$, където Ω е пространство от елементарни събития; $\mathcal{A} \subseteq 2^{\Omega}$ е σ-алгебра; $\mathbb{P}: \mathcal{A} \to [0,1]$ е вероятностно пространство.

⊕ $\Omega = \{1, 2, \dots N\}$; $\mathcal{A} = 2^{\Omega}$; $\mathbb{P}(\{i\}) = \frac{1}{N}$; $N_i \geq 1$

⊕ $\Omega = \{x^2 + y^2 \leq 1\}$; A, B, C; $\mathcal{A} = \{\emptyset, \Omega, A, B, C, A \cup B, A \cup C, B \cup C\}$

$\mathbb{P}(A) = ?$, $\mathbb{P}(B) = ?$, $\mathbb{P}(C) = ?$

⊕ $\Omega = \{x^2 + y^2 \leq 1\}$; $\mathcal{B}(\Omega) \in \mathcal{A}$, $\mathbb{P}(A) = \frac{|A|}{|\Omega|}$; $\forall A \in \mathcal{A}$