* Bayesian Statistics/ · Review of Probability Theosy: X - duta-feberating Process (random variable), X - realization/data (outcome where X & SUPP (X) * The support of X contains all Possible out comes of X - Discrete case: The support of X is at most countably Infinite, SUPP (X) < NI - The Probability mass function P(X) maps P: SUPP(X) -> (0,1] - The Cumulative distribution function (CDF) is given by F(x)=P(x =x). $F(x) = \sum_{y \in SUPP(X)} P(y)$ - Cor- ruous case: The support of x is uncountably infinite, | suppost = |R - The (DF is given by $F(x) = P(X \leq x) = \int_{-\infty}^{x} f(x) dx$. $-P(X+[a,b])=P(X+b)-P(X+q)=F(b)-F(w)=\int_a^b f(x)dx.$ - The Probability density function maps P: supp(x) -> (0,00) · Examples of distributions: X~ Bernoulli(P) => P(x) = Px (1-P) , Where X & E0,13 $\times \sim Binomial(n,P) \Longrightarrow (\stackrel{N}{\times}) \stackrel{P}{\sim} (1-P)^{N-X}$ XV Exponential (7) => 7e-2x $\times \sim N(u, \sigma^2) = \sqrt{\frac{1}{2\pi\sigma^2}} e^{-\frac{1}{2}\sigma^2} (x-M)^2$ e we sav that a distribution is degenerate when P(x) = 0 of 1, for some x (In other words, the process is not random). • The Palameter space of of a landom variable is the set of Palameter values for which the Ry is Non-desenerate. *A Parametric moder is given by F: {P(x; a): 0 € @ 3, S.t. dim (@) < 00

ex: Frem = {0 (1-0) 1-x: 4 € (0,1) 3

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* Bayesian Statistics
· Review of Probability Theory :
 X - duta-feberating Process (random variable), X - realization/duta (outcome
                                                     where X & SUPP (X)
* The support of X contains all Possible out comes of X.
- Discrete case: The support of X is at most countably
infinite, [SUPP (X)] < N1.
- The Probability mass function P(X) maps P: SUPP(X) -> (0,1]
- The Cumulative distribution function (CDF) is given by F(x)=P(X =x).
F(x) = \sum_{y \in S \cap P(x)} P(y)
y \in S \cap P(x)
x \neq y \leq x
- ( or Mous case: The support of x is uncountably infinite, | supp ( ) = |R
- The iDF is given by F(x) = P(X \leq x) = \int_{-\infty}^{x} f(x) dx.
 -P(X \in [a,b]) = P(X \leq b) - P(X \leq q) = F(b) - F(a) = \int_a^b f(x) dx.
 - The Probability density function maps P: supp(X) -> (0,00)
· Examples of distributions:
 X \sim Bernoulli(P) \Rightarrow P(X) = P^{X}(1-P)^{-X}, where X \in \{0,1\}
 \times \sim Binomial(N,P) \Longrightarrow (N ) P^* (1-P)^{N-x}
 X~ Exponential (2) => 2e-2x
 X \sim N(A, \sigma^2) = \sqrt{\frac{1}{2\pi\sigma^2}} e^{-\frac{1}{2}\sigma^2} (x - M)^2
e we say that a distribution is degenerate when P(x) = 0 0/1, for some x
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