

Lab Nr. 5, Probability and Statistics

Numerical Characteristics of Random Variables

Statistics Toolbox: stat

The means and variances of the following distributions:

Distribution	Notation	Mean $E(X)$	Variance $V(X)$
discrete uniform	$U(m)$	$(N+1)/2$	$(N^2-1)/12$
binomial	$B(n, p)$	np	$Npq, q=1-p$
hypergeometric	$H(N, n1, n)$	$n*n1/N$	$nn1(N-n1)(N-n)/[N^2(N-1)]$
Poisson	$P(\lambda)$	λ	λ
Pascal	$NB(n, p)$	$nq/p, q=1-p$	nq/p^2
geometric	$G(p)$	$n/p, n=1-p$	n/p^2
uniform	$U(a, b)$	$(a+b)/2$	$(b-a)^2/12$
normal	$N(\mu, \sigma)$	μ	σ^2
gamma	$Ga(a, b)$	ab	ab^2
exponential	$Exp(\lambda)$	λ	λ^2
beta	$\beta(a, b)$	$a/(a+b)$	$ab/[(a+b+1)(a+b)^2]$
Student	$T(n)$	$0, n>1$	$n/(n-2), n>2$
chi squared	$\chi^2(n)$	n	$2n$
Fisher	$F(m, n)$	$n/(n-2), n>2$	$[2n^2(m+n-2)]/[m(n-2)^2(n-4)], n>4$