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ECE 3522: STOCHASTIC PROCESSES IN SIGNALS AND SYSTEMS

**COMPUTER ASSIGNMENT (CA) NO. . 5: COVARIANCE AND CORRELATION**

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# Problem Statement (partial)

We are asked to use MATLAB’s random number generator and generate uniformly distributed random numbers on the range [0,1]. The mean, μ, should be 0.5, and the variance, σ2, should be

$$\frac{1}{12}\left(1-0\right)^{2}=\frac{1}{12}≈0.0833$$

. Below are our instructor’s specifications.

“Generate N random numbers, denoted by the signal x[n]. Estimate the mean () and variance () using N data points. Compute the error of these estimates as:

1. .”

# MATLAB Code and Results

clear;clf;close all;clc;

%% Pb 1a

clear;clf;clc;

r = 0 + (0+1)\*rand(21,1);

u=(1/2)\*(0+1)

v=(1/12)\*(1-0)^2

uest=mean(r)

vest=var(r)

uerr=uest-u

verr=vest-v

>>

u = 0.500000000000000

v = 0.083333333333333

uest = 0.487786235796775

vest = 0.076217022318036

uerr = -0.012213764203225

verr = -0.007116311015297

# Conclusions

There were other parts to the problem statement, but I ran out of time to complete their tasks.