

The Title of Your Report

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Abstract—

I. INTRODUCTION

II. METHODOLOGY

In this section you should describe the method of the experiment.

A. Hardware

The experiments conducted in this report were performed on a computer with the following specifications:

- CPU: i5-2500 (4 cores @ 3.3-3.7 GHz)
- RAM: 8 GB DDR3
- OS: Ubuntu 15.04

B. Introductory Experiments

To breed foster familiarity with Octave, a task was issued that involved generating a .wav file with a given method, and then creating one for comparison. The difference between the two functions being that the first one relies on a single call to rand() to generate multiple values, while the new method makes a call to rand() for each value in turn. A sample rate of 8000Hz was used, to decrease computation time.

The given implementation took 173ms to generate 1000s of 8000Hz white noise. The custom implementation took 64244ms. This new method is a handy 370 times slower than the original method. This speed-down is likely due to the overheads of calling the rand() function multiple times.

The code for the custom implementation is shown below:

```
function whiten = createwhiten(s)
    sample_rate = 8000;
    whiten = zeros(s*sample_rate,1);
    t = s*sample_rate
    for i = 1:t
        whiten(i) = rand();
    end

    whiten = whiten*2-1;
end
```

C. Correlation Implementation

The source code for the bespoke correlation solution is shown below.

```
function r = mycorr(x,y)
    % readability >> succinctness
    sx = sum(x);
    sy = sum(y);
    sxy = sum(x.*y); % elementwise multiplication
    sx2 = sum(x.^2); % elementwise squares
    sy2 = sum(y.^2);
    n = max(size(x)); % just in case we get some column/row vector mixups
    num = sxy - sx*sy/n;
    den = sqrt((sx2-(sx.^2)/n)*(sy2-(sy.^2)/n));
    r = -2; % default, in case correlation could not be performed
    if(den != 0)
        r = num/den;
    end
end
```

D. Experiment Procedure

Furthermore, include detail relating to the experiment itself: what did you do, in what order was this done, why was this done, etc. What are you trying to prove / disprove?

III. RESULTS

Sample Size	mycorr (ms)	corr (ms)	Speed-up
2.4128	3.7909	6.3648e+00	10
2.1110	1.3089	1.6128e+01	100
2.1570	1.5306	1.4092e+01	1000
2.4791	2.6298	9.4270e+00	10000
3.7451	1.3590	2.7558e+00	100000
21.465	11.776	1.8228e+00	1000000
140.40	104.61	1.3422e+00	10000000
1344.2	1042.5	1.2895e+00	100000000

IV. CONCLUSION

REFERENCES