

```

%=====
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%LOADS AUDIO DATASET
%=====
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clear
clc

%loads the training dataset-----
directory_path = "/Users/charlesdavi/Desktop/Datasets/Counting_Dataset/Edited/"

%loads the first file to size the dataset
i = 1;
file_name = [directory_path int2str(i) '.wav'];
[y, fs] = audioread(file_name);
y(:,2) = []; %creates a mono file
y = y(:);
N = size(y,1)

%loads the full dataset
num_files = 5;
dataset = zeros(num_files,N);

for i = 1 : num_files

    file_name = [directory_path int2str(i) '.wav'];
    [y, fs] = audioread(file_name);
    y(:,2) = []; %creates a mono file, assuming both channels are the same

    y = y(:); %converts the audio matrix to a vector

    dataset(i,:) = y';

endfor

%displays the first vector loaded
y = dataset(1,:);
figure, plot(y)

file_path = "/Users/charlesdavi/Desktop/Temp_Octave_Outputs/original_wave.png";

saveas(gcf,file_path);

%=====
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%SOLVES FOR IDEAL COMPRESSION USING THE FIRST VECTOR LOADED

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FROM THE DATASET

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y = dataset(1,:);
fs = 44100;
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tic;
[final_avg_vector final_output final_input] = partition_time_series(y);
toc
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```
y2 = final_avg_vector;
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```
%displays the compressed vector
figure, plot(y2)
```

```
file_path = "/Users/charlesdavi/Desktop/Temp_Octave_Outputs/
compressed_wave.png";
```

```
saveas(gcf,file_path);
```

```
orig_num_rows = size(final_input,2);
compressed_num_rows = size(final_avg_vector,1);
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```
compression_percentage = compressed_num_rows/orig_num_rows
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```
%writes output file
fs = fs*compression_percentage
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file_name = "/Users/charlesdavi/Desktop/Temp_Octave_Outputs/
solved_compression.wav";
audiowrite (file_name, y2, fs);
```

```
info = audioinfo(file_name)
```

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%=====
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%USES A FIXED COMPRESSION PERCENTAGE
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%=====
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```
y = dataset(1,:);
orig_num_rows = size(y,2);
```

```
fs = 44100;
compression_percentage = .1;
```

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compressed_num_rows = floor(compression_percentage*orig_num_rows);

%compresses the vector
tic;
[avg_vector output] = fixed_partition_time_series(y, compressed_num_rows);
toc

fs = fs*compression_percentage %adjusts

file_name = "/Users/charlesdavi/Desktop/Temp_Octave_Outputs/
fixed_compression.wav";
audiowrite (file_name, avg_vector, fs);

info = audioinfo(file_name)

%=====
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%COMPRESSES THE DATASET USING EITHER SOLVED OR FIXED
COMPRESSION
%=====
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%compressed_num_rows will determine the compression percentage

tic;
for i = 1 : num_files

    y = dataset(i,:);
    [avg_vector output] = fixed_partition_time_series(y, compressed_num_rows);
    compressed_dataset(i,:) = avg_vector;

endfor
toc

```