**DAILY ASSESSMENT FORMAT**

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| **Date:** | **27/05/2020** | **Name:** | **Rohan shetty** |
| **Course:** | **Digital signal processing** | **USN:** | **4AL17EC079** |
| **Topic:** | **Fourier transform, fast fourier transform, wavelet transform,**  **ECG signal analysis using MATLAB** | **Semester & Section:** | **6th &‘B’** |
| **GitHub Repository:** | **rohan-shetty-online-courses** |  |  |

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| **FORENOON SESSION DETAILS** |
| **Image of session**  C:\Users\user\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Screenshot (159).png  C:\Users\user\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Screenshot (160).png  **Fourier transform:**  **The Fourier transform of a function of time is a**[**complex-valued function**](https://en.wikipedia.org/wiki/Complex-valued_function)**of frequency, whose magnitude (**[**absolute value**](https://en.wikipedia.org/wiki/Absolute_value#Complex_numbers)**) represents the amount of that frequency present in the original function, and whose**[**argument**](https://en.wikipedia.org/wiki/Argument_(complex_analysis))**is the**[**phase offset**](https://en.wikipedia.org/wiki/Phase_offset)**of the basic**[**sinusoid**](https://en.wikipedia.org/wiki/Sine_wave)**in that frequency. The Fourier transform is not limited to functions of time, but the**[**domain**](https://en.wikipedia.org/wiki/Domain_of_a_function)**of the original function is commonly referred to as the**[**time domain**](https://en.wikipedia.org/wiki/Time_domain)**. There is also an inverse Fourier transform that mathematically synthesizes the original function from its frequency domain representation, as proven by the**[**Fourier inversion theorem**](https://en.wikipedia.org/wiki/Fourier_inversion_theorem)**.**  **Fast fourier transform:**  **A fast Fourier transform (FFT) is an**[**algorithm**](https://en.wikipedia.org/wiki/Algorithm)**that computes the**[**discrete Fourier transform**](https://en.wikipedia.org/wiki/Discrete_Fourier_transform)**(DFT) of a sequence, or its inverse (IDFT).**[**Fourier analysis**](https://en.wikipedia.org/wiki/Fourier_analysis)**converts a signal from its original domain (often time or space) to a representation in the**[**frequency domain**](https://en.wikipedia.org/wiki/Frequency_domain)**and vice versa. The DFT is obtained by decomposing a**[**sequence**](https://en.wikipedia.org/wiki/Sequence)**of values into components of different frequencies.**[**[1]**](https://en.wikipedia.org/wiki/Fast_Fourier_transform#cite_note-Heideman_Johnson_Burrus_1984-1)**This operation is useful in many fields, but computing it directly from the definition is often too slow to be practical. An FFT rapidly computes such transformations by**[**factorizing**](https://en.wikipedia.org/wiki/Matrix_decomposition)**the**[**DFT matrix**](https://en.wikipedia.org/wiki/DFT_matrix)**into a product of**[**sparse**](https://en.wikipedia.org/wiki/Sparse_matrix)**(mostly zero) factors.**[**[2]**](https://en.wikipedia.org/wiki/Fast_Fourier_transform#cite_note-Loan_1992-2)**result, it manages to reduce the**[**complexity**](https://en.wikipedia.org/wiki/Computational_complexity_theory)**of computing the DFT from which arises if one simply applies the definition of DFT, to , where is the data size. The difference in speed can be enormous, especially for long data sets where N may be in the thousands or millions**  **Matlab code:**  **Fs=1000;**  **Ts=1/Fs;**  **dt=0:Ts:2-Ts;**  **f1=10;**  **f2=30;**  **f3=70;**  **y1=10\*sin(2\*pi\*f1\*dt);**  **y2=10\*sin(2\*pi\*f2\*dt);**  **y3=10\*sin(2\*pi\*f3\*dt);**  **y4=y1+y2+y3;**  **subplot(4,1,1);**  **plot(dt,y1, ‘r’);**  **subplot(4,1,2);**  **plot(dt,y2, ‘r’);**  **subplot(4,1,3);**  **plot(dt,y3, ‘r’);**  **subplot(4,1,4);**  **plot(dt,y4, ‘r’);**  **nfft=length(y4);**  **nfft2=2^nextpow2(nfft);**  **ff=fft(y4,nfft2);**  **plot(abs(ff));**  **Wavelet transform:**  **A wavelet transform is a linear transformation in which the basis functions (except the first) are scaled and shifted versions of one function, called the “mother wavelet.” If the wavelet can be selected to resemble components of the image, then a compact representation results**  **Implementation of signal filtering using WT in matlab:**  **close all;**  **clear all;**  **clc;**  **[k,Fs]=audioread[‘man\_voice.wav’]**  **k=k\*0.5/rms(k);**  **k=awgn(k,12,’measured’);**  **[c,1]=wavedec(k,3, ‘db4’);**  **b=wthresh(c, ‘s’ ,0.25);**  **y=waverec(b,1, ‘db4’);**  **y=y\*0.5/rms(y));**  **sound(y,Fs);**  **ECG signal analysis using matlab:**  **sig=load(‘ecg.txt’);**  **plot(sig)**  **xlabel(‘samples’);**  **ylabel(‘electrical activity’);**  **title(‘ECG signal sampled at 100hz’)**  **hold on**  **plot(sig,’r0’)** |
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| **Date:** | **27/05/ 2020** | **Name:** | **Rohan shetty** |
| **Course:** | **Python** | **USN:** | **4AL17EC079** |
| **Topic:** | **Graphical user interface with tkinter,**  **Interacting with databases** | **Semester & Section:** | **6th &‘B’** |
| **GitHub Repository:** | **rohan-shetty-online-classes** |  |  |

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| **AFTERNOON SESSION DETAILS** |
| **Image of session**  C:\Users\user\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Screenshot (161).png    **GRAPHICAL USER INTERFACES WITH TKINTER :**    **Python offers multiple options for developing GUI (Graphical User Interface). Out of all the GUI methods, tkinter is the most commonly used method. It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with tkinter is the fastest and easiest way to create the GUI applications. Creating a GUI using tkinter is an easy task. To create a tkinter app:**  **Importing the module – tkinter Create the main window (container) Add any number of widgets to the main window Apply the event Trigger on the widgets. Importing tkinter is same as importing any other module in the Python code. Note that the name of the module in Python 2.x is ‘Tkinter’ and in Python 3.x it is ‘tkinter’.**  **import tkinter There are two main methods used which the user needs to remember while creating the Python application with GUI Tk(screenName=None, baseName=None, className=’Tk’, useTk=1): To create a main window, tkinter offers a method ‘Tk(screenName=None, baseName=None, className=’Tk’, useTk=1)’. To change the name of the window, you can change the className to the desired one. The basic code used to create the main window of the application is: m=tkinter.Tk() where m is the name of the main window object mainloop(): There is a method known by the name mainloop() is used when your application is ready to run. mainloop() is an infinite loop used to run the application, wait for an event to occur and process the event as long as the window is not closed. m.mainloop()**  **import tkinter**  **m = tkinter.Tk() ''' widgets are added here ''' m.mainloop() tkinter also offers access to the geometric configuration of the widgets which can organize the widgets in the parent windows. There are mainly three geometry manager classes class.**  **pack() method:It organizes the widgets in blocks before placing in the parent widget. grid() method:It organizes the widgets in grid (table-like structure) before placing in the parent widget. place() method:It organizes the widgets by placing them on specific positions directed by the programmer.**    **INTERACTING WITH DATABASES :**    **Given the variety of techniques available to produce protein-protein interaction data and the large number of studies that are published every day, an enormous effort is required to store this information in a way that is both accessible and intelligible to the user. Molecular interaction databases aim to fulfil this need by extracting information from scientific publications or, in some cases, by including protein-protein interaction predictions found using computational method.The storage of interactions in publicly available databases allows access to a large volume of interaction data and subsequent analysis of the interactome** |
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