Birla Institute of Technology & Science, Pilani, Rajasthan
First Semester 2021-2022
Lab-1: Information Sources

Course: EEE F311 Communication Systems
Instructor-in-Charge: S M Zafaruddin

24-08-2021 (P2, P4) and 26-08-2021 (P1, P3)

Instructions

- Create a folder named Lab in your shared folder.
- Create a Lab1 ub-folder in the Lab folder. This folder will be your working directory.
- Develop .m file and .py file corresponding to each task.
- You can start the tasks in any order.
- Once all tasks are done, paste your codes and plots/results/observations/conclusions in a word doc and upload through a Dropbox file request link. The link will be shared through Slack.
- Best of Luck

Objectives

In this task, the objective is to study various types of information sources.

MATLAB Task 1 (Information Signal)

1.1 Audio Signal

Download an audio file from Internet or record your own voice and save the file in the folder Lab 1. Use the MATLAB command 'audioread'. and 'sound' to verify the audio file. Convert the audio data into bit stream using the command dec2bin. Use 'reshape' to change the data in serial format.

1.2 Image Signal

Download a .png/.jpg file from Internet or any image file and save the file in the folder Lab 1. Use the MATLAB command 'imread'. and 'image' to verify the image file. Convert the image file into bit stream using the command dec2bin. Use 'reshape' to change the data in serial format.

1.3 Text Signal

Write 3 sentences about your expectation from the CommSys course in a notepad save the file as .txt in the folder Lab 1. Use the MATLAB command 'fopen', 'fread'to verify the text file. Convert the text file into bit stream using the command dec2bin. Use 'reshape' to change the data in serial format.

Python Task 2 (Sampling Theorem)

Plot a sinewave $m(t) = \sin(2\pi N10t)$, where N is the last digit of your BITS ID. If the last digit is zero, take $N = 2$. Carefully choose the time-interval t to convert an analog sidignal to discrete-time signal.

Project Task

We have started individual tasks with a bigger picture: to design an end-to-end simulator for a digital communication system. In this task, we have generated information signals.