Course Project

Phase 2

Phase 2 Deadline: January 10, 2022 (11:59 PM)

I. Project Description

1. Design a rate $1/3$ convolutional encoder with constraint length $K = 3$. You are free to choose the generator polynomials the way you wish.
2. Develop software code that implements the convolutional encoder without using built in functions in MATLAB
3. Add AWGN noise to the transmitted data
4. Implement the hard decision Viterbi decoder using your own developed MATLAB code.
5. Plot the BER versus SNR curve when using the convolutional code, versus without coding.
6. You are required to integrate Phase 2 of the project with Phase 1 (source coding) and have an end-to-end running communication system.
7. The received text file after adding noise and error correction should be compared with the transmitted text file indicating the errors that occurred in the received text for 3 different SNR values, with and without channel coding.

You can use MATLAB or any other suitable programming language.

II. Course Project Rules

- Make a team of 2 at most [larger numbers will need approval].
- Write your code so that it can be readable by others. Define your variables clearly (not abbreviated). Use comments as much as you want.
- The figures that you are going to show must be well presented. They must have clear labels, titles, and maybe legends.
- Your answers to the questions in the previous section must be appropriately enumerated.
- Any COPIED reports even one single part will take a **ZERO**.