

程序代写代做 CS编程辅导

Lab 7: LoRa encoding and decoding

Objectives

- To encode and decode text messages using MATLAB

Prerequisites

- Knowledge of MATLAB techniques.
- Access to a PC



You will use a LoRa simulator in MATLAB to modulate/encode text messages, then decode/demodulate the encoded message.

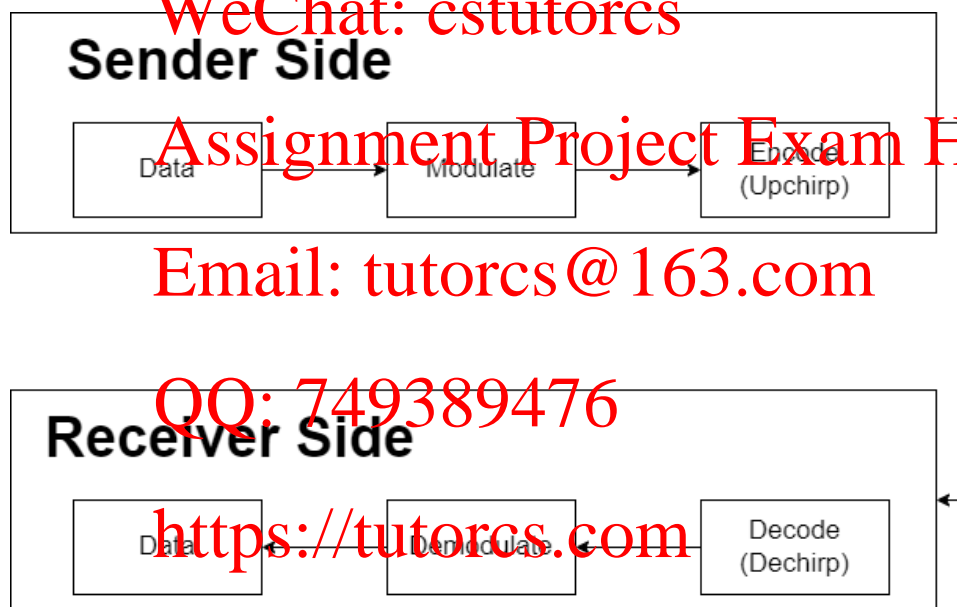


Figure 1: LoRa sender and receiver side process

Task 1: Discover the spectrogram of a LoRa packet

Firstly, install the LoRa simulator in MATHLAB: <https://github.com/jkadbear/LoRaPHY>

Then try to use the LoRa simulator to encode a message “4336” (you can refer to the example code “save_signal_to_file.m” in the git) and output the signal array as a file. Then generate the spectrogram of the signal (Fogure 2 shows an example of LoRa spectrogram). Include the spectrogram image in your report, while specifying the preamble, Start Frame Delimiter (SFD), and data part in the spectrogram.

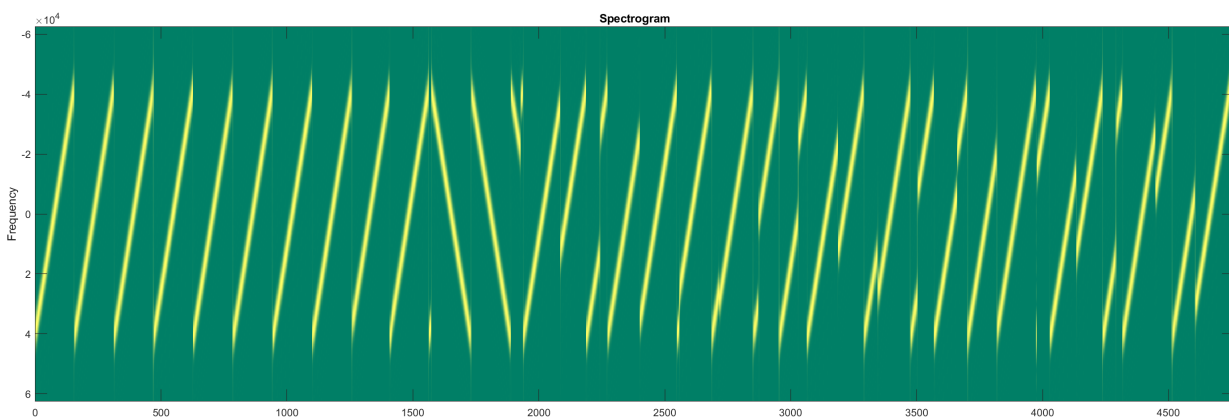


Figure 2: the spectrogram of the message “1234”

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Task 2: Decode the LoRa signal

Load the signal from the file `task1`, and then convert the signal back to the original text message (you can refer to `load_signal_from_file.m`). Include the output in your report.

Submit your report that contains the results from the two tasks.



Penalty at the rate of 5% for each day late will be strictly enforced for all lab submissions. All submissions will be subject to strict UNSW plagiarism rules.

End of Lab 7 – Hope you enjoyed this lab

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