



UDYAM'22

COMMNET

Problem Statement for Round 1

Global catastrophic risks that threaten to destroy or cripple human civilization. What lies beneath day-to-day reality is a fantastically complex web of phenomena. Perturb that web, poke it or shove it, and there are ripples that don't always settle quickly.

Planetary climate is one major structural element of the web, and is perfectly happy to ripple and slide over to states that modern humans I haven't experienced this before.

The humans by this time have decided to make an interstellar colony with the launch of interplanetary or interstellar spacecraft .

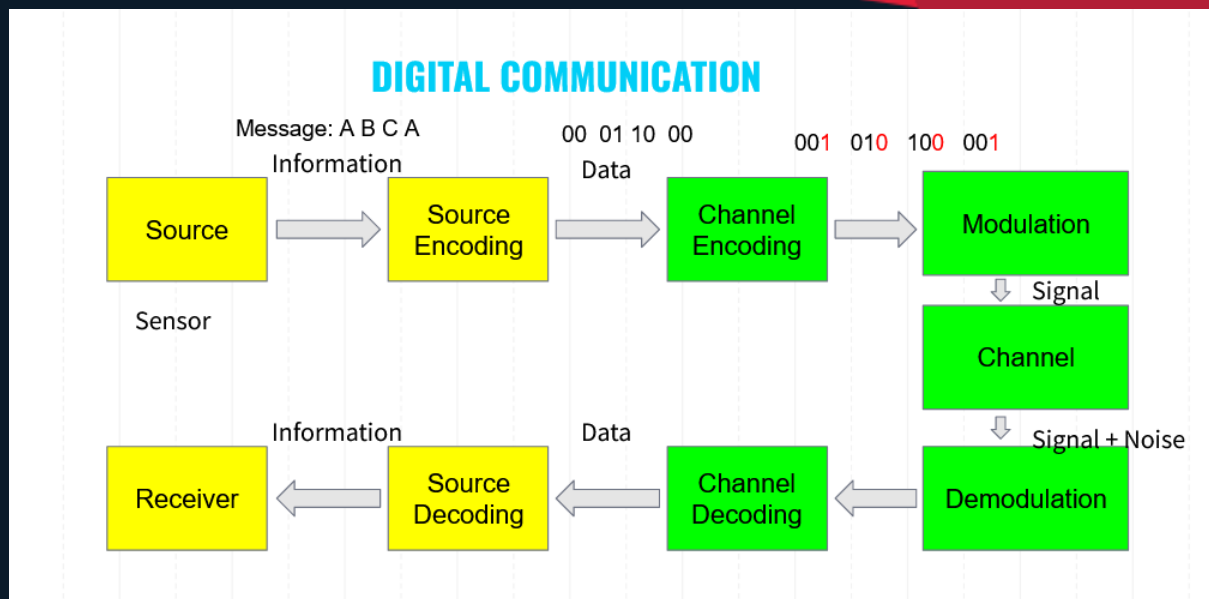
Communications with a growing population of exploration vehicles and settlements within a planetary system, or with probes launched to other stars, could also create a noisy beacon for other species to detect.

And perhaps the ultimate in last-ditch attempts to avert a slow-rolling planetary disaster is to send out a distress signal, looking for answers to existential challenges; because at that point why not?

A group of Apocalyptic fanatics must use their knowledge of digital communication to save the world. You have been tasked to design and implement a transmitter and receiver system that is capable of achieving this task of making external contact.

Tasks

Your tasks are -



Implement the whole cycle in matlab

- Source (10) : Load the audio signal
- Source encoding (15) : convert the float values into binary bits
- Channel encoding (15) : Add parity bit or crc or any other coding scheme
- Modulation + Channel + Demodulation (30). Already implemented [here](#)

Similarly implement the opposite cycle to get the input given as output.

Note :

- The output might have error after transmission
- You can use any modulation schemes extra marks will be given for implementing coding schemes which provide higher data rate other than BPSK , QPSK and QAM. (10)
- The source is a custom image (used during evaluation) read as input then converted to pixels 1D array . (15)
- Following the submission guidelines (5)

Remember : The solution should be able to take any audio file as input and process it .

Scoring:

Complete at least one task for a certificate. Partial scoring is applicable.

Scoring is as follows

- PS 1: 30% (this round)
- PS 2 - 50%
- PS3 (Offline) - 20% (Optional)



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In case of tie the following assignment ([here](#)) will be used to judge the winner .

Submission:

Submit the drive link/zip in submissions on the website

www.udyamfest.com

It should contain -

1. It should contain a pdf/docx explaining the solution along with
 - a. Team information. i.e. Team name, team members, branch of each student along with Roll No.
 - b. Summary of extent of the problem statement you were able to solve
 - c. names of tools/software used.
 2. Matlab scripts/other programming files you used for the tasks with.
 3. Name the drive folder/zip as COMMNET_PS1_<TEAM NAME>
- Deadline-11:59 PM, 31 March, 2021