ICARUS-1 CubeSat

- Communication Challenge

This is the documentation required by the challenge, the codes and graphs have been uploaded to a Github repository at the link : https://github.com/YourAniki05/Communications-Subsystems/tree/main, this document will contain the approach, challenges and implementation for the challenge done by me

Approach:

I started the process by uploading the Communication Challenge pdf, provided in the mail, to Deepseek (due to unforeseen circumstances, perplexity couldn't be used) and then outlined the approach I needed from it. While it generated the python codes, I went ahead and started a repository on GitHub. After a bit of trial and error I managed to get codes for each phase (introduction of new problems to the raw data) and got the graphs that were close to what was needed.

Challenges:

A few challenges did arise while I was attempting this challenge:

- ➔ File Explorer would go into a "Not Responding" state and additionally it wouldn't let the repository as well as VScode access the cubesat_dataset files
  - ◆ I resolved this issue by just forcing my files to localize into my laptop directly, as the "Not Responding" state and the access problems stemmed from an error within OneDrive
- ➔ Deepseek codes would sometimes throw a few errors that wouldn't make sense
  - ◆ This was resolved by mentioning the error message to DeepSeek, which then gave me debug codes to treat the problem (the debug codes used have been included in the repository)
  - ◆ An additional error that was resolved was related to the plots/graphs not appearing or reflecting the changes

Implementations:

The workflow I had mentioned to Deepseek involved the tackling of each phase, which then generated the codes for each, building up on the reliability by using the error corrections we did for the prior phases, I had also additionally decided that I would save the plots directly in repository and mentioned the same to DeepSeek
The time restraint did mean I couldn't spend a lot of time on making the codes more efficient and reliable as is