Multimedia Processing and Communications **Fall-2020**

Homework # 8 **Due Date: Jan 27th, 2021**

Programming exercises

Please submit all the plots and your code. Put title and labels on your plots; include comments throughout your code.

Cyclic Redundancy Check

In this project, you will write a Python/MATLAB code that implements the Cyclic Redundancy Check (CRC) error detection method. For details, see your Lecture Slides (week 9) and the textbook "**Multimedia Communications: Applications, Networks, Protocols and Standards, (pg: 332-336)".**

Write a code that performs the following steps:

1. Generate error detection bits for any given 32-bit message bitstream and for the generator polynomials given below.

2. Form the transmitted message, and create random bit errors in the message.

3. Perform error detection on the received message.

- Simulate your code for the following generator polynomials, and for random 2-bit and 4-bit errors:

$G_1(x) = x^4 + x^2 + 1$

$G_2(x) = x^7 + x^6 + x^2 + 1$

- Generate error patterns, both for $G_1(x)$ and $G_2(x)$, that won't be detected by the CRC method.

- Approximately, what percentage of the errors is detected? Which of the two polynomials would you say is more successful? Explain your answer.