ASSIGNMENT – 1

COM 837 ML for Wireless Communication

Submission Date: 8-Feb-2026 11:59 p.m. IST

1. Write a MATLAB/PYTHON code to implement
    a. a) sections II.B.1 (Proposed SVM-based Channel Estimation considering Uncorrelated Channels) and
    b. II.B.2 (Proposed SVM-based Channel Estimation considering Correlated Channels).

   This corresponds to recreating Figures 3, 4 and 6 in the manuscript. NO OTHER scheme (except the proposed one by the authors NGUYEN et al.) needs to be implemented.
2. Extend the proposed SVM-based channel estimation scheme to an Orthogonal Frequency Division Multiplexing (OFDM) system. Refer to section IV.A for a description of the OFDM system and how the scheme in section II.B.1 is adapted to apply in an OFDM system
3. Consider the exact simulation parameters as that given in section V and individual figure captions.
4. Redo parts 1(a) and 1(b) by considering the noise \bar{z} to be correlated. You can assume any fixed positive semi-definite matrix as the noise covariance. Do you see any change in the NMSE values. Why?

Disclaimers:

1. Please refrain from plagiarism or using GEN AI platforms for writing the code. Individual viva-voce sessions shall be conducted to award final marks.
2. Please submit the code and your discussions/observations. Code should be well-written along with sufficient and self-explanatory comments in each of the code snippet/segment. Submission of only code, results without any insightful observations will not fetch ANY marks.