LEARNING OBJECTIVES - Lecture 6 (Rate-Efficient Reliable Communication)

After lecture, you should be able to:

1. Describe how linear block codes work, in terms of generator and parity-check matrices
2. Compute the rate of an error-correcting code, such as the (7,4) Hamming code
3. Derive the optimality of nearest-neighbor decoding for linear codes, and discuss why the minimum distance provides insight into error-correcting capability
4. Use Shannon’s random coding argument
5. State the rate threshold for random linear codes