Unit 8 - Principles of MIMO Wireless Communication (Continued)

Assignment-7

The task is to optimize the system's performance by adjusting the transmit weights to maximize the Signal-to-Noise Ratio (SNR) at the receive antennas. Consider a MIMO system with two transmit antennas and two receive antennas.

Tasks:
1. Calculate the channel matrix for the given MIMO system.
2. Determine the optimal transmit weights to maximize the SNR.
3. Compute the Signal-to-Noise Ratio (SNR) at the receive antennas.

Channel Matrix:
$$H = \begin{bmatrix} 0.5 & 0.3 \\ -0.1 & 0.7 \end{bmatrix}$$

SNR Calculation:
$$\text{SNR} = \frac{E\{\text{signal}^2\}}{E\{\text{noise}^2\}}$$

Where $E\{\text{signal}^2\}$ is the average signal power and $E\{\text{noise}^2\}$ is the average noise power.