

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

# EN2130 – COMMUNICATION DESIGN PROJECT

COURSE PROJECT

# EVALUATION

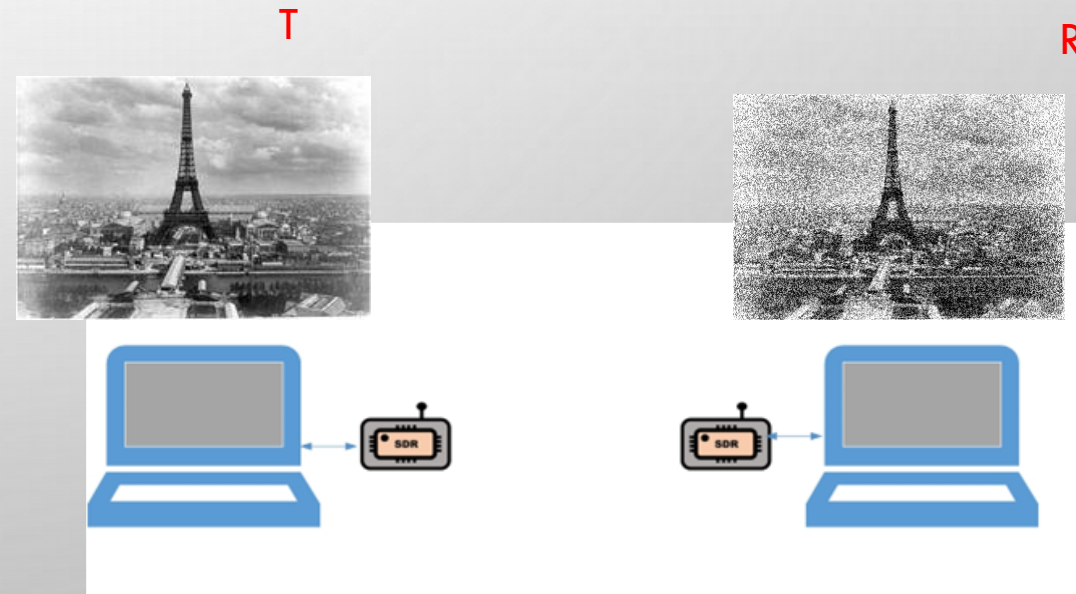
- PRESENTATION – 10 MINS (50%)
  - EXPLAINING THE DESIGN METHODOLOGY
  - JUSTIFICATION OF SELECTED TECHNIQUES AND PARAMETERS
  - PERFORMANCE FIGURES
- DEMONSTRATION (30%)
  - FUNCTIONALITY CHECK
- INDIVIDUAL QUESTIONING (20%)
  - UNDERSTANDING OF THE OVERALL DESIGN

# DEMONSTRATION (FUNCTIONALITY) EVALUATION CRITERIA

## 1. SUCCESSFUL WIRELESS TRANSMISSION OF A GIVEN IMAGE FROM THE TRANSMITTER TO THE RECEIVER

- EVALUATION METRIC
  - MEAN SQUARED ERROR (MSE) BETWEEN THE TRANSMITTED IMAGE (T) AND THE RECEIVED IMAGE (R)
  - MSE FOR MONO-CHROME IMAGE OF SIZE  $M \times N$  IS DEFINED AS

$$\bullet \text{ MSE} = \sum_{i=1}^M \sum_{j=1}^N [T(i,j) - R(i,j)]^2$$



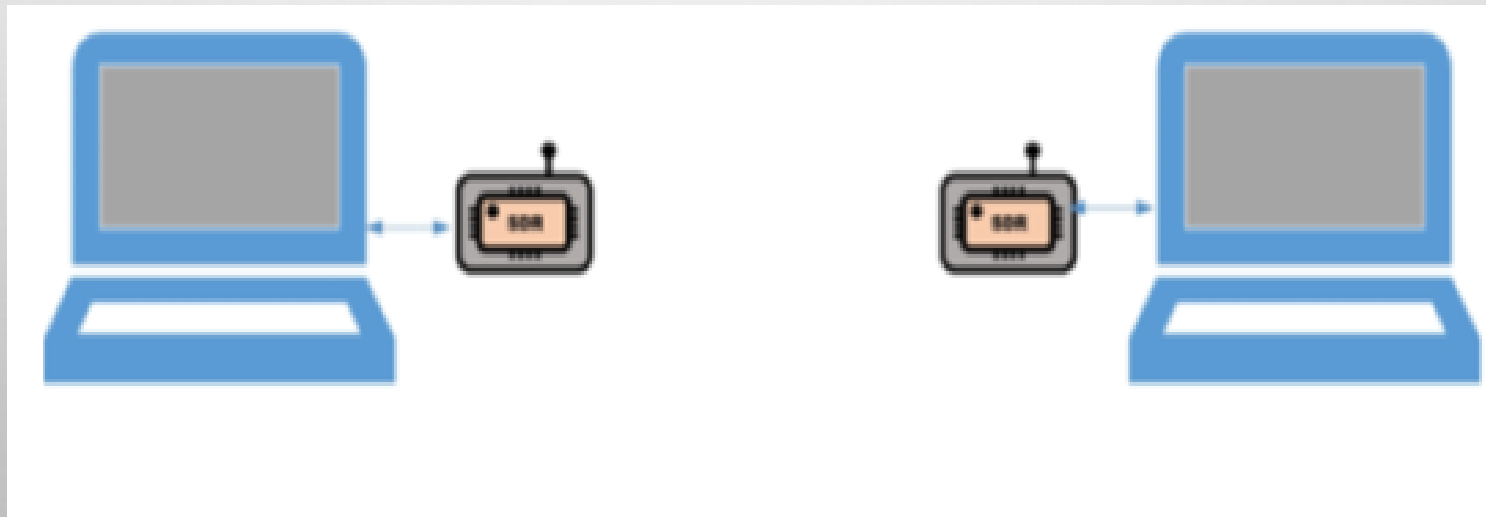
# DEMONSTRATION (FUNCTIONALITY) EVALUATION CRITERIA

## 2. SUCCESSFUL WIRELESS TRANSMISSION OF A GIVEN BINARY DATA STREAM IMAGE FROM THE TRANSMITTER TO THE RECEIVER

- EVALUATION METRIC - BIT ERROR RATE (BER)

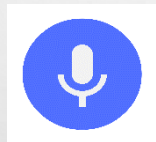
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# DEMONSTRATION (FUNCTIONALITY) EVALUATION CRITERIA

3. SUCCESSFUL WIRELESS TRANSMISSION OF VOICE (REAL-TIME VOICE CAPTURED FROM THE MICROPHONE OF THE COMPUTER, OR RECORDED VOICE CLIP)
  - EVALUATION METRIC
    - BASED ON THE QUALITY OF THE RECEIVED VOICE (EVALUATED BY HEARING IT)



# DEMONSTRATION (FUNCTIONALITY) EVALUATION CRITERIA

## ➤ SCENARIOS THAT ARE GOING TO USE TO EVALUATE YOUR PROJECT

1. WITHOUT JAMMING
2. WITH JAMMING
3. PERFORMANCE WITH THE DISTANCE BETWEEN THE TRANSMITTER AND THE RECEIVER (1M, 5M, ETC)
4. WITH FREQUENCY OFFSET BETWEEN TRANSMITTER AND RECEIVER
5. WITH TIMING OFFSET BETWEEN TRANSMITTER AND RECEIVER
6. MULTIPATH EFFECT CORRECTION

## ➤ ADDITIONAL 5 MARKS WILL BE GIVEN IF YOU IMPLEMENTED ADDITIONAL FEATURES AND FUNCTIONALITIES

- CHANNEL ESTIMATION
- ADAPTIVE TRANSMISSION
- NOISE CANCELLATION