

1 Signals

Signals are defined to be a function that conveys information about a phenomenon. They can also be said to be a medium which carry information relevant to a receiver.

Electromagnetic wave, voltage or current carrying information are some examples of signals.

1.1 Are there any non-time based signals?

- Images: They are represented as a combination of monochrome images in three primary colors.

$$Image : \mathbb{R}^2 \rightarrow \{R, G, B\}$$

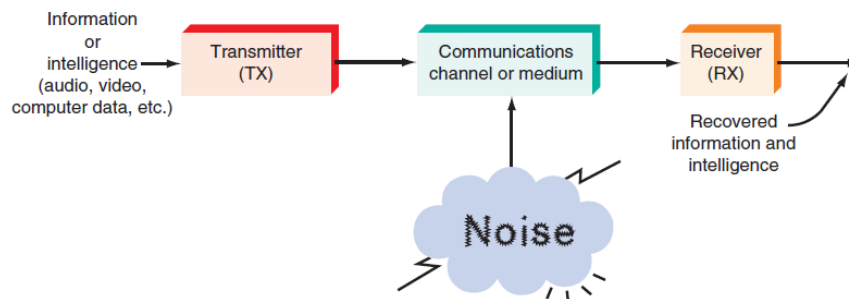
- Temperature at various points in a room.

$$Temperature : \mathbb{R}^3 \rightarrow K \quad (\text{or Celsius})$$

- Videos: A video signal is a sequence of images.
- Text or a page in a book.

2 Communication

Communication is the process of exchanging information. Transmission, reception and reconstruction of the transmitted signal take place in this process.



Channel: Separates the source and receiver and is not directly under our control. This leads to some disturbances or imperfections in the channel, which is called noise.