

Data Communications (CMU2005)

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All class material can be accessed via
Brightspace.

Data Communications

Course Books:

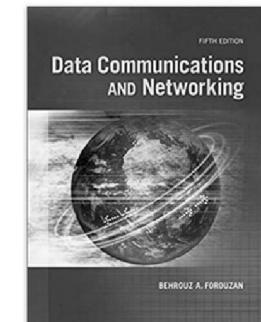
- DATA & COMPUTER COMMUNICATIONS:

- William Stallings, Prentice Hall.



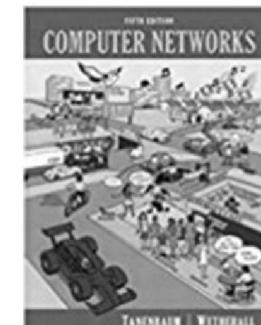
- DATA COMMUNICATIONS & NETWORKING:

- Behrouz A. Forouzan, McGraw Hill.



- COMPUTER NETWORKS:

- Andrew Tanenbaum, Pearson Education.



Introduction

- This course is concerned with the
Communications Problem:

“How can two remote entities communicate with each other effectively and efficiently”

Cave Painting - 40,000 to 10,000 BC



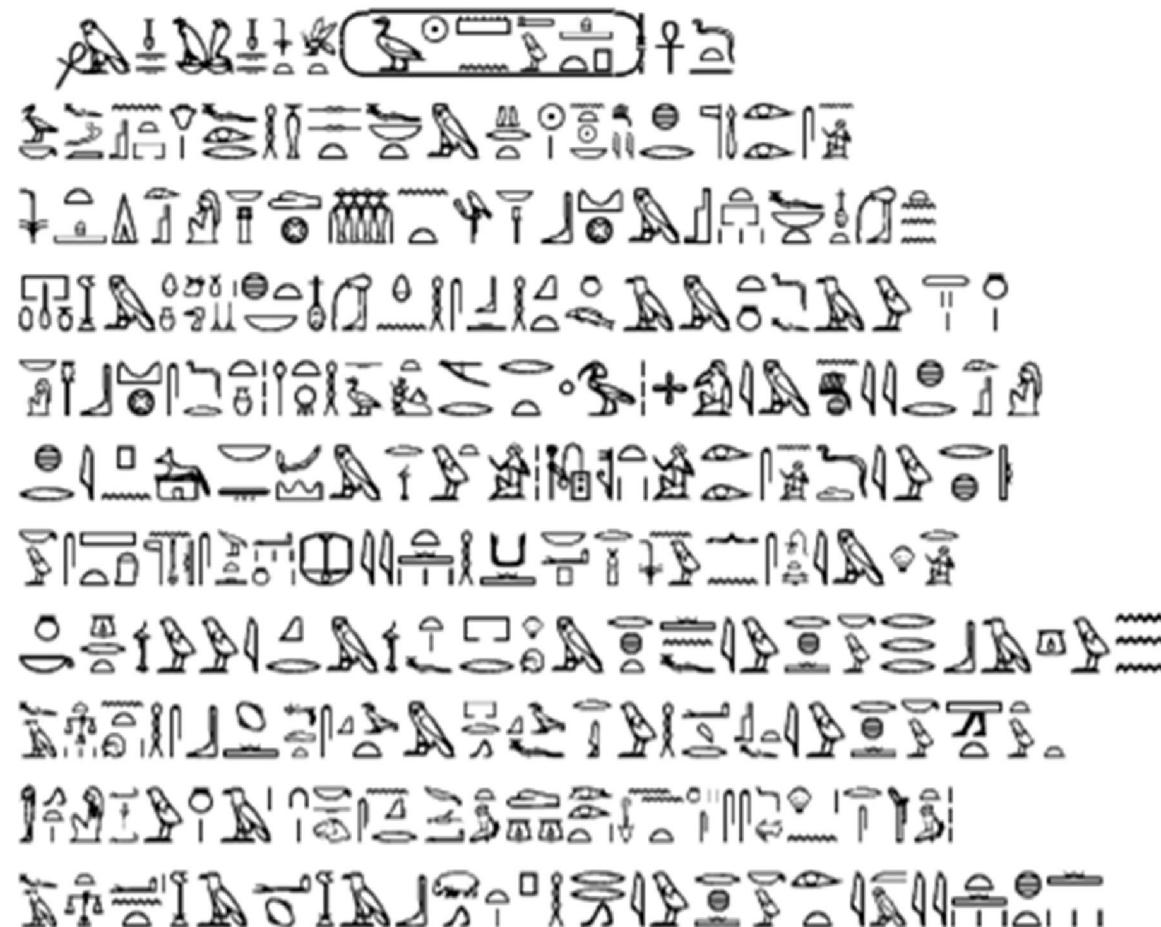
Lascaux, France

Sumerian Cuneiform - 3000 BC



Inscriptions from the Behistun Rock (Western Iran)

Hieroglyphic Text



Model of Communications System



Communications Model Components

- Source: Device that generates data
- Transmitter: Transforms and encodes data
- Transmission System: The physical system connecting the source and destination devices
- Receiver: Performs reverse function of Transmitter
- Destination: Receives the incoming data

Course Topics

- Introduction
 - » Communications Model/Tasks
- Signal Analysis
 - » Signalling concepts
 - » Bandwidth concepts
 - » Relationship between Data Rate and Bandwidth
- Data Transmission concepts
 - » Digital versus analogue data/signals/systems
- Transmission Impairments
 - » Attenuation/Distortion/Noise
- Channel capacity
- Transmission Media
 - » Wired/Wireless
- Data Encoding
 - » Digital/Analogue Data onto Digital/Analogue signals etc.
- Synchronous /Asynchronous

Course Topics

- Flow Control techniques
 - Error detection techniques
 - Error Control techniques
 - Sample Link Protocol
 - Multiplexing
 - Switching Networks
 - Local Area Networks
 - » Topologies and operation
 - » Protocols
 - » Access Control techniques
-and much more