A SEMINAR ON THE TOPIC

HOLOGRAPHIC STORAGE
Introduction of HOLOGRAPHIC
THE BASICS

- Blue-green argon laser.
- Beam splitters to split the laser beam.
- Mirrors to direct the laser beams.
- LCD panel.
- Lenses to focus the laser beams.
- Lithium-niobate crystal or photopolymer.
- Charge-coupled device (CCD) camera.
TERMS USED

- Sensitivity refers to the extent of refractive index modulation produced per unit of exposure. Diffraction efficiency is proportional to the square of the index modulation times the effective thickness.

- The dynamic range determines how many holograms may be multiplexed in a single volume data.
Two-color recording
Recording the data

- A single laser beam, split into two beams.
- The signal (or object) beam for data transfer and a reference beam.
- A hologram is formed when the two beams intersect the recording medium.
- The data is encoded into the signal beam using a spatial light modulator (SLM) device that translates electronic data (0's and 1's) into an optical pattern of light and dark pixels.
- The hologram is recorded in a light sensitive storage medium where the reference and signal beams intersect.
- The hologram is projected onto a detector that reads the data in parallel.
DESKTOP HOLOGRAPHIC DATA STORAGE

- After more than 30 years of research and development, a desktop holographic storage system (HDSS) is close at hand.

- Early holographic data storage devices will have capacities of 125 GB and transfer rates of about 40 MB per second.
APPLICATION OF HOLOGRAPHY

- Hologram.
- Holographic Data Storage.
Hologram

- It is a light wave interference pattern recorded on photographic film (or other suitable surface) that can produce a 3-dimensional image when illuminated properly.
Holographic data storage captures data using laser beams shining on photorefractive material.

Creating holograms is achieved by means of two coherent beams of light split from one laser source, one being the reference beam and the other the signal beam.
HOLOGRAPHIC MEMORY UPDATE

- For nearly four decades, holographic memory has been the great white whale of technology research.
- Since the mid-1990s, DARPA has contributed to two groups working on holographic memory technologies: The Holographic Data Storage System (HDSS), The PhotoRefractive Information Storage Materials (PRISM).
- University of Arizona and Carnegie Mellon University, Formed in 1995, HDSS was given a five-year mission to develop a practical holographic memory system, whereas PRISM, formed in 1994.
THANK YOU