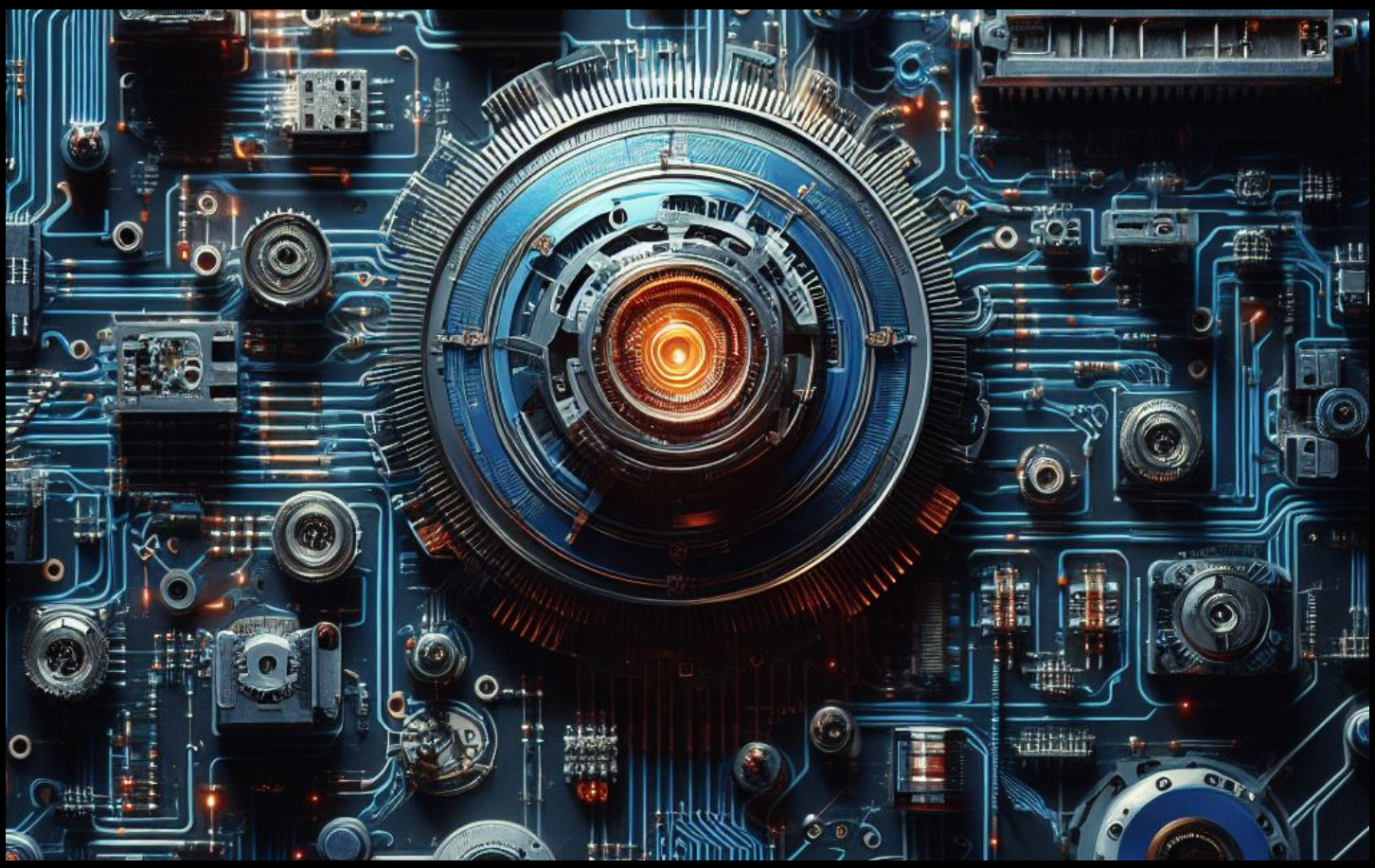
ELECTRICAL DIGEST

HALF YEARLY MAGAZINE

THE TECH ISSUE

The electric light did not come from continuous improvement of candles.



Nikola Tesla **Michael Faraday** **Thomas Edison** **James Clerk Maxwell**

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GEETHANJALI INSTITUTE OF SCIENCE AND TECHNOLOGY

HALF YEARLY ELECTRICAL MAGAZINE

CREATIVE TEAM

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VISION-MISSION

VISION

To emerge as a competent learning centre producing prospective Engineers

MISSION

DM1: Provide conceptual and practical education through effective teaching-Learning strategies
DM2: Establish adequate Infrastructural support for enhanced learning
DM3: Interact with industry for upgrading professional skills including smart grid.
DM4: Organise personality development activities for imbibing life skills and ethical values

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Graduates of B.Tech., in Electrical and Electronics Engineering program shall able to

PEO1: Analyse and solve real world Electrical and Electronics Engineering problems by applying modern engineering concepts.

PEO2: Pursue professional career or research.

PEO3: Demonstrate Excellence in multi-disciplinary teams through effective inter personal skills and ethical behaviour.

PEO4: Engage in continuous learning and adapt to the ever-evolving requirements of profession & society.

THIS ISSUE

SPACE TELE-SCOPE

A space telescope or space observatory is a telescope in outer space used to observe astronomical objects. Suggested by Lyman Spitzer in 1946, the first operational telescopes were the American Orbiting Astronomical Observatory, OAO-2 launched in 1968, and the Soviet Orion 1 ultraviolet telescope aboard space station Salyut 1 in 1971. Space telescopes avoid the filtering and distortion (scintillation) of electromagnetic radiation which they observe, and avoid light pollution which ground-based observatories encounter. They are divided into two types: Satellites which map the entire sky (astronomical survey), and satellites which focus on selected astronomical objects or parts of the sky and beyond. Space telescopes are distinct from Earth imaging satellites, which point toward Earth for satellite imaging, applied for weather analysis, espionage, and other types of information gathering. Wilhelm Beer and Johann Heinrich Mädler in 1837 discussed the advantages of an observatory on the Moon. In 1946, American theoretical astrophysicist Lyman Spitzer proposed a telescope in space. Spitzer's proposal called for a large telescope that would not be hindered by Earth's atmosphere. After lobbying in the 1960s and 70s for such a system to be built, Spitzer's vision ultimately materialized into the Hubble Space Telescope, which was launched on April 24, 1990, by the Space Shuttle Discovery (STS-31).The first operational space telescopes were the American Orbiting Astronomical Observatory, OAO-2 launched in 1968, and the Soviet Orion 1 ultraviolet telescope aboard space station Salyut 1 in 1971

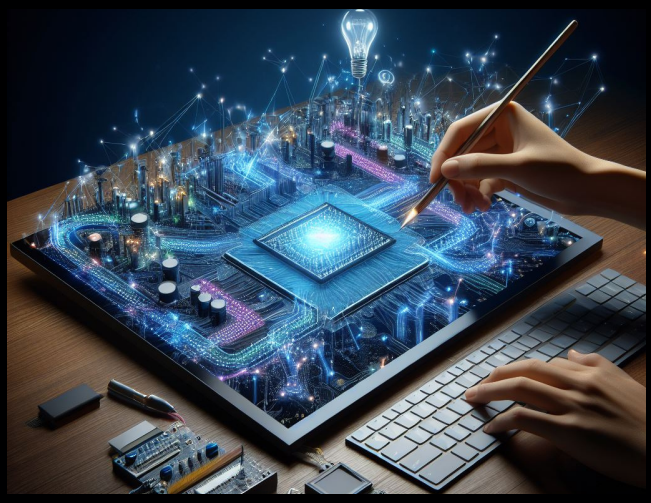
ADVANTAGES

Performing astronomy from ground-based observatories on Earth is limited by the filtering and distortion of electromagnetic radiation (scintillation or twinkling) due to the atmosphere.[1] A telescope orbiting Earth outside the atmosphere is subject neither to twinkling nor to light pollution from artificial light sources on Earth. As a result, the angular resolution of space telescopes is often much higher than a ground-based telescope with a similar aperture. Many larger terrestrial telescopes, however, reduce atmospheric effects with adaptive optics. Space-based astronomy is more important for frequency ranges that are outside the optical window and the radio window, the only two wavelength ranges of the electromagnetic spectrum that are not severely attenuated by the atmosphere. For example, X-ray astronomy is nearly impossible when done from Earth, and has reached its current importance in astronomy only due to orbiting X-ray telescopes such as the Chandra X-ray Observatory and the XMM-Newton observatory. Infrared and ultraviolet are also largely blocked.

AMOLED DISPLAY

AMOLED (ACTIVE-MATRIX ORGANIC LIGHT-EMITTING DIODE) IS A TYPE OF OLED DISPLAY DEVICE TECHNOLOGY. OLED DESCRIBES A SPECIFIC TYPE OF THIN-FILM-DISPLAY TECHNOLOGY IN WHICH ORGANIC COMPOUNDS FORM THE ELECTROLUMINESCENT MATERIAL.

Ch. Sravya(202U1A0204)



An AMOLED display consists of an active matrix of OLED pixels generating light (luminescence) upon electrical activation that have been deposited or integrated onto a thin-film transistor (TFT) array, which functions as a series of switches to control the current flowing to each individual pixel
Typically, this continuous current flow is controlled by at least two TFTs at each pixel (to trigger the luminescence), with one TFT to start and stop the charging of a storage capacitor and the second to provide a voltage source at the level needed to create a constant current to the pixel, thereby eliminating the need for the very high currents required for passive-matrix OLED operation.[6]
TFT backplane technology is crucial in the fabrication of AMOLED displays. In AMOLEDs, the two primary TFT backplane technologies, polycrystalline silicon (poly-Si) and amorphous silicon (a-Si), are currently used offering the potential for directly fabricating the active-matrix backplanes at low temperatures (below 150 °C) onto flexible plastic substrates for producing flexible AMOLED displays.

AMOLED was developed in 2006. Samsung SDI was one of the main investors in the technology, and many other display companies were also developing it. One of the earliest consumer electronics products with an AMOLED display was the BenQ-Siemens S88 mobile handset[8] and, in 2007, the iriver Clix 2 portable media player.

DO YOU KNOW ?

LIGHTNING IS A GIANT SPARK OF ELECTRICITY IN THE ATMOSPHERE BETWEEN CLOUDS, THE AIR, OR THE GROUND.

K. Penchalaiah(202U1A0212)

Lightning is a natural phenomenon formed by electrostatic discharges through the atmosphere between two electrically charged regions, either both in the atmosphere or with one in the atmosphere and on the ground, temporarily neutralizing these in a near-instantaneous release of an average of one gigajoule of energy.[1][2][3] This discharge may produce a wide range of electromagnetic radiation, from heat created by the rapid movement of electrons, to brilliant flashes of visible light in the form of black-body radiation. Lightning causes thunder, a sound from the shock wave which develops as gases in the vicinity of the discharge experience a sudden increase in pressure. Lightning occurs commonly during thunderstorms as well as other types of energetic weather systems, but volcanic lightning can also occur during volcanic eruptions. Lightning is an atmospheric electrical phenomenon and contributes to the global atmospheric electrical circuit.

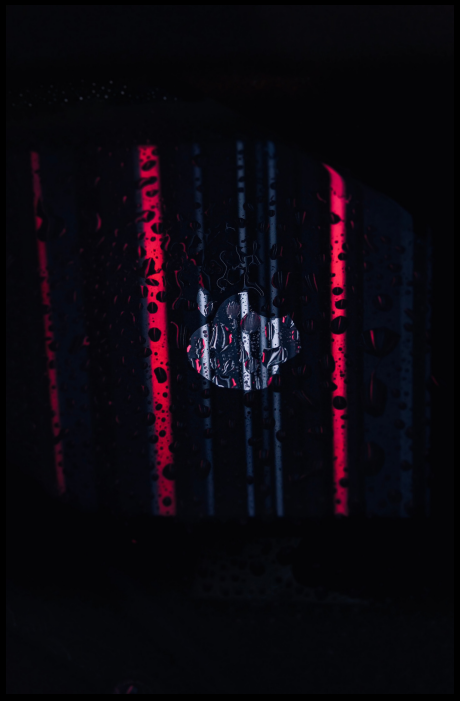
The three main kinds of lightning are distinguished by where they occur: either inside a single thundercloud (intra-cloud), between two clouds (cloud-to-cloud), or between a cloud and the ground (cloud-to-ground), in which case it is referred to as a lightning strike. Many other observational variants are recognized, including "heat lightning", which can be seen from a great distance but not heard; dry lightning, which can cause forest fires; and ball lightning, which is rarely observed scientifically. Humans have deified lightning for millennia. Idiomatic expressions derived from lightning, such as the English expression "bolt from the blue", are common across languages. At all times people have been fascinated by the sight and difference of lightning. The fear of lightning is called astraphobia.

There is growing evidence that lightning activity is increased by particulate emissions (a form of air pollution). However, lightning may also improve air quality and clean greenhouse gases such as methane from the atmosphere, while creating nitrogen oxide and ozone at the same time. Lightning is also the major cause of wildfire, and wildfire can contribute to climate change as well. More studies are warranted to clarify their relationship. The details of the charging process are still being studied by scientists, but there is general agreement on some of the basic concepts of thunderstorm electrification. Electrification can be by the triboelectric effect leading to electron or ion transfer between colliding bodies. Uncharged, colliding water-drops can become charged because of charge transfer between them (as aqueous ions) in an electric field as would exist in a thunder cloud. The main charging area in a thunderstorm occurs in the central part of the storm where air is moving upward rapidly (updraft) and temperatures range from −15 to −25 °C (5 to −13 °F); see Figure 1. In that area, the combination of temperature and rapid upward air movement produces a mixture of super-cooled cloud droplets (small water droplets below freezing), small ice crystals, and graupel (soft hail). The updraft carries the super-cooled cloud droplets and very small ice crystals upward.

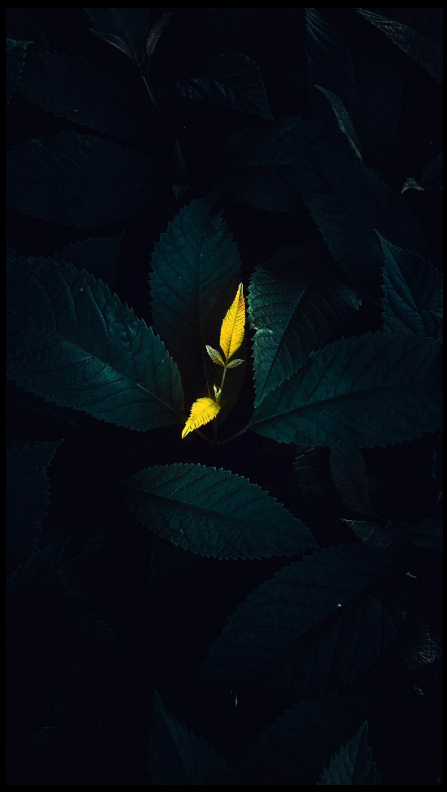
A GLIMPSE OF PHOTOGRAPHY

-S.Paramesh

Photography is the art, application, and practice of creating images by recording light, either electronically by means of an image sensor, or chemically by means of a light-sensitive material such as photographic film. It is employed in many fields of science, manufacturing (e.g., photolithography), and business, as well as its more direct uses for art, film and video production, recreational purposes, hobby, and mass communication.



Typically, a lens is used to focus the light reflected or emitted from objects into a real image on the light-sensitive surface inside a camera during a timed exposure. With an electronic image sensor, this produces an electrical charge at each pixel, which is electronically processed and stored in a digital image file for subsequent display or processing. Photography is the result of combining several technical discoveries, relating to seeing an image and capturing the image.



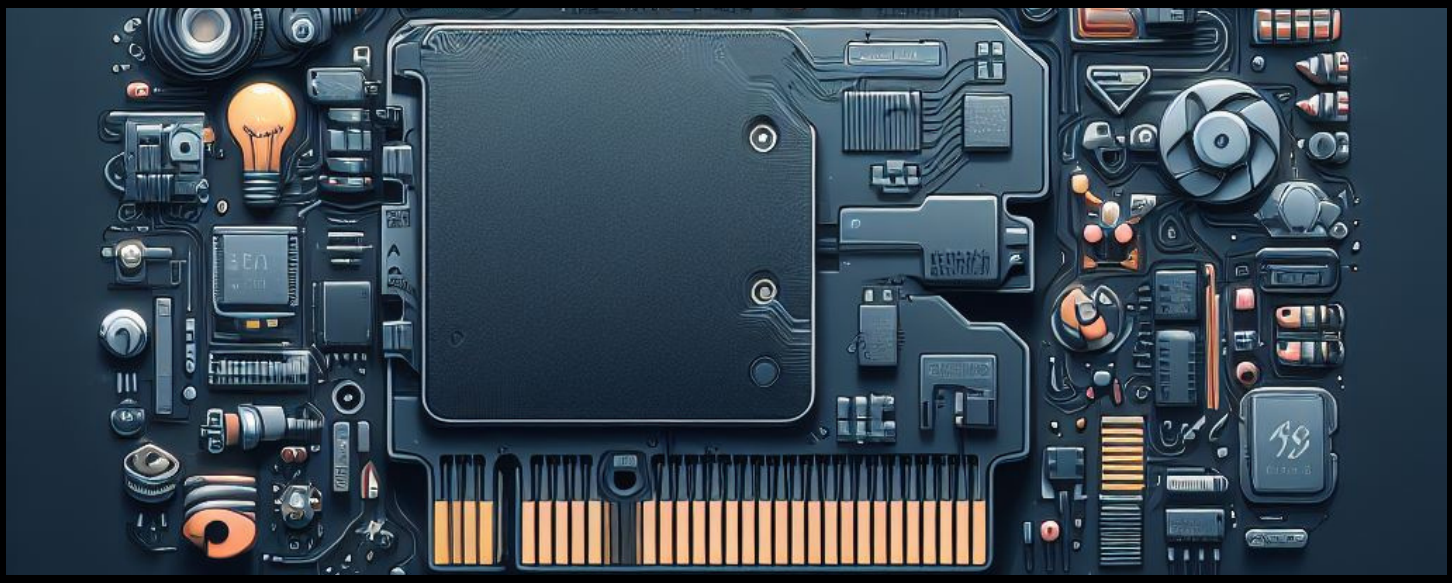
Color photography is photography that uses media capable of capturing and reproducing colors. By contrast, black-and-white or gray-monochrome photography records only a single channel of luminance (brightness) and uses media capable only of showing shades of gray. In color photography, electronic sensors or light-sensitive chemicals record color information at the time of exposure. This is usually done by analyzing the spectrum of colors into three channels of information, one dominated by red, another by green and the third by blue, in imitation of the way the normal human eye senses color. The recorded information is then used to reproduce the original colors by mixing various proportions of red, green and blue light (RGB color, used by video displays, digital projectors and some historical photographic processes), or by using dyes or pigments to remove various proportions of the red, green and blue which are present in white light (CMY color, used for prints on paper and transparencies on film). Monochrome images which have been "colorized" by tinting selected areas by hand or mechanically or with the aid of a computer are "colored photographs", not "color photographs". Their colors are not dependent on the actual colors of the objects photographed and may be inaccurate.

The foundation of all practical color processes, the three-color method was first suggested in an 1855 paper by Scottish physicist James Clerk Maxwell, with the first color photograph produced by Thomas Sutton for a Maxwell lecture in 1861. Color photography has been the dominant form of photography since the 1970s, with monochrome photography mostly relegated to niche markets such as art photography.

EVER WONDER !

HOW CAN MEMORY CARD STORE LARGE AMOUNTS OF DATA DESPITE BEING SO SMALL ?

A memory card is an electronic data storage device used for storing digital information, typically using flash memory. These are commonly used in digital portable electronic devices. They allow adding memory to such devices using a card in a socket instead of protruding USB flash drives.



The basis for memory card technology is flash memory.[2] It was invented by Fujio Masuoka at Toshiba in 1980[3][4] and commercialized by Toshiba in 1987.[5][6]

PC Cards (PCMCIA) were the first commercial memory card formats (type I cards) to come out, but are now mainly used in industrial applications and to connect I/O devices such as modems. In 1992, SanDisk introduced FlashDisk, a PCMCIA card and one of the first memory cards that did not require battery power to retain its contents.[7] Since 1994, a number of memory card formats smaller than the PC Card arrived. The first one was CompactFlash and later SmartMedia and Miniature Card. The desire for smaller cards for cell-phones, PDAs, and compact digital cameras drove a trend that left the previous generation of "compact" cards looking big. In 2001, SM alone captured 50% of the digital camera market and CF had captured the professional digital camera market. However, by 2005, SD/MMC had nearly taken over SmartMedia's spot, though not to the same level and with stiff competition coming from Memory Stick variants, as well as CompactFlash. In industrial and embedded fields, even the venerable PC card (PCMCIA) memory cards still manage to maintain a niche, while in mobile phones and PDAs, the memory card has become smaller.

Initially memory cards were expensive, costing US$3 per megabyte of capacity in 2001;[8] this led to the development of miniaturized rotating magnetic disk memory devices such as the Microdrive, PocketZip and Dataplay. All three concepts became obsolete once flash memory prices became lower and their capacities became higher by 2006.[7]

Since 2010, new products of Sony (previously only using Memory Stick) and Olympus (previously only using XD-Card) have been offered with an additional SD-Card slot.[9] Effectively the format war has turned in SD-Card's favor.

EVENTS

- INDUSTRIAL VISIT
- PCB WORKSHOP

INDUSTRIAL VISIT

An industrial visit to IIIT Bangalore and Tech Summit 2022, 26/c, Hosur Road, Electronic City, Bangalore 560100 and Vasanth Nagar, Bengaluru, 560052 was successfully organized by the Department of Electrical and Electronics Engineering on 17 Nov 2022, Thursday. Forty two students and two faculty visited IIIT Bangalore to know how the process of research is done in the institute, what are the advance research projects are going on and how we can join and approach to join for the research institutions, we visited Tech Summit 2022 to know how all the companies come across a place and exhibit their ideas to others and expand their businesses. We all students and faculty went to IIIT Bangalore in a private bus transport at 9:00 AM.As all the students and the faculty are instructed that to see all the external features of the institution. We observed that the environment which is very good and the institution is very big that each section of research projects are given with different blocks. we visited the MINRO Centre and we explore a sensor based laboratory in which we are able to see mini prototypes of their ideas what they are going to be done.

PCB WORKSHOP

One week workshop on printed circuit boards was organized by the department of EEE, from 26th december to 31st December. The expert Ms.Sk.Rubeena explained various concepts of Printed Circuit Boards related aspects right from the fundamentals for IInd year B.Tech EEE students. The workshop was aimed to provide knowledge about complete PCB designing using simulation tool to test electronics & electrical circuit in software environment.PCB design software & to make physical PCB at home so that any student can make project on his own.

Following content are covered in workshop:

✓ Schematic Design

✓ Component Footprint Design

✓ Integrated Library Design

✓ PCB Design & Routing

The Principal of Geethanjali institute of science and technology, Prof.Dr.K.Sundeepkumarin the inaugural address also mentioned the necessity of the printed circuit.boards in the related fields of Electrical Engineering.